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ABSTRACT

This report contains presentations and program descriptions given at a conference on physical fitness and older adults. Included are: (1) Keynote Address (Richard S. Schweiker); (2) "Government's Role in Fitness for the Aging" (Pete V. Domenici and Beverly B. Byron); (3) "What Is Aging?" (James Skinner); (4) Medical Implications of Fitness and Sports for Seniors: "Joint Changes in the Aging" (James A. Nicholas), "Health and Heart Enhancement" (Samuel M. Fox III), and "Exercise and the Post-menopausal Woman" (Barbara L. Drinkwater); (5) Luncheon Address (Janet R. MacLean); (6) "Nutritional Considerations for the Active Senior" (Myron Winick); (7) "Functional Fitness for Older Americans" (Herbert A. deVries); (8) "Physical Activity: The Foundation of Youth in Aging" (Everett L. Smith); (9) descriptions of state programs in Illinois, Maryland, Pennsylvania, Virginia, and Indiana; (10) descriptions of special programs--"Take Care of Yourself," "Calisthenics for Seniors," and the Colorado Springs Senior Center; (11) "Sociological and Psychological Implications of Fitness and Sports for the Elderly" (Art Ulene); (12) "The 'E' in Elderly: Exercise" (Robert N. Butler); (13) "Recreation Programs for Active Seniors" (John H. Davis, Constance R. McAdam, Clark T. Thorstenson, and Brian Latham); (14) "Physical Fitness Programs for the Aging Employee" (Richard D. Finucane and Andrew T. Letendre); and (15) "The Time Is Now" (C. Carson Conrad). (CJ)

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A SYNOPSIS OF THE NATIONAL CONFERENCE ON FITNESS AND AGING

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GENERAL FOODS CORPORATION

SEPTEMBER 10-11, 1981
SHOREHAM HOTEL
WASHINGTON, D.C.

THE WHITE HOUSE

WASHINGTON

I am pleased to welcome you to the National Conference on Fitness and Aging.

This is an important and timely event, for while regular exercise is highly desirable for people of all ages, it is absolutely essential for the elderly. Without it, they quickly lose strength and flexibility, and they are more vulnerable to accidents and disease. Physical inactivity over a period of many years may limit their mobility and hamper their ability to care for themselves.

Since many older people have an exaggerated notion of the risks involved in exercise and, in the past, even medical authorities have perhaps been overcautious in prescribing exercise for the elderly, we can begin to appreciate the fact that we are faced with an urgent task.

I am encouraged that the public and private sectors are joining forces to combat these challenges. You have my best wishes for a productive meeting, and I commend your sense of commitment to solving these problems.

Ronald Reagan

Ronald Reagan

As I see it, one of the purposes of this Conference is to explore ways of making the most of the added years of life that medical science and other advances in knowledge have made possible.

A former Surgeon General of the United States has said that perhaps 75% of the factors that influence health are not susceptible to conventional medical treatment. Two of these factors are heredity and behavior. We can't do much about the first, but we can change the second in ways that may lengthen life and will, at the very least, make the years that we do live more productive and more enjoyable.

One of the best things to emerge from the fitness movement is the knowledge that many of the problems we have traditionally attributed to aging actually are the results of disuse. If this Conference succeeds in making more aged and aging Americans aware of that simple fact, it will have been worth all of the careful planning and hard work that you have put into it.

George H. Allen
Chairman
The President's Council
on Physical Fitness and Sports

George H. Allen

One of the most gratifying features of today's fitness movement is the extent to which people of all ages are involved. Twenty or thirty years ago, exercise and sport were largely the domain of the young, but now we find that growing numbers of those who are called "senior citizens," "the elderly," or "older Americans" are taking part.

The President's Council on Physical Fitness and Sports welcomes this development, and this First National Conference on Fitness and Aging is an attempt to address the special opportunities and problems that it presents. We believe it will help create a clearer national understanding of the aspirations and needs of our fastest-growing population group.

The President's Council is proud of its tradition of partnership with private enterprise in the development and conduct of programs, and we are especially grateful to the sponsors who have joined with us and other cooperating organizations to make this historic event possible. Our warmest thanks to them and to each of you.

C. Carson Conrad
Executive Director

C. Carson Conrad

As Mayor of the District of Columbia, I am pleased to extend greetings and a warm welcome to the members and guests of the President's Council on Physical Fitness and Sports on the occasion of your National Conference on Fitness and Aging which is being held in Washington, D.C., September 10, 1981. We commend you for the work your outstanding organization continues to perform in our City and throughout our Nation through your programs and activities on behalf of our youth and senior citizens and your work in encouraging physical fitness and sports in America. You are contributing to civic betterment and to the progress of our City and Country.

I salute you in these endeavors and know that the knowledge shared during your meetings will help all of us to better meet the changes and challenges we face in improving the quality of life of all our citizens. It is a special honor for Washington, D.C. to host your National Conference on Fitness and Aging.

While you are here, I hope you will have the opportunity to sample and enjoy the diversity of life and cosmopolitan nature of our metropolitan region and to visit the many famous historical monuments and unique attractions that are a part of our Nation's Capital. The residents of our City join with me in extending a warm welcome to all of you and in wishing you a pleasant stay and a productive conference.

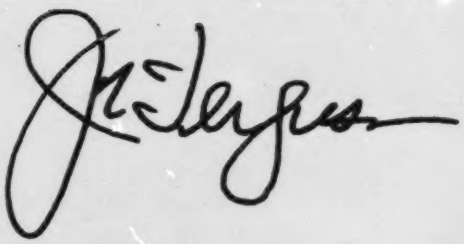
Marion Barry, Jr.
Mayor

The traditions of America place our senior citizens in a position of honor and respect. Wisdom that can only be obtained through a time consuming gathering of experience sets older people apart, in a realm reserved for those who have lived through years of change and accommodation, and have witnessed evolution.

There are now more adults over 55 than ever before in the United States, and they comprise a reserve of knowledge and mature judgment that can only benefit our country. But an active and resourceful mind is best served by an equally vital body that can turn thought into substance and maintain a fruitful, contributing lifestyle. And so it is critical that we develop and share information which encourages productive longevity and motivates our senior citizens to continue in the mainstream of America.

The National Conference on Fitness and Aging is designed to provide evidence that the concepts of "fitness" and "aging" are not mutually exclusive. They are, instead, compatible and should be viewed in an introspective light as we all move along towards what will hopefully be long and active lives.

James L. Ferguson
Chairman of the Board
General Foods Corporation



Thursday, September 10

6:30 AM—Early Morning Walkers, Joggers
(Rock Creek Park)
Liz Elliott, Executive Director
American Running and Fitness Association

Wake-Up Exercises—Hotel Terrace
Bert Knitter, Manager
DOJ Occupational Health Fitness Program

7:00 AM—Registration

7:30 AM—Continental Breakfast
Ambassador Room

8:00 AM—Exhibits Open—Diplomat Room

9:00 AM—Opening Ceremonies—Regency Room
United States Air Force Band

Presentation of Colors—Veterans of Foreign Wars
National Honor Guard

Invocation—Reverend Kenneth C. Eade, Rector
St. Mary's Episcopal Church, Arlington, Virginia

Welcome—George Allen, Chairman, President's Council
James Ferguson, Chairman of the Board
General Foods Corporation

Greetings and Introductions

9:30 AM—Keynote Address
The Honorable Richard S. Schweiker
Secretary, Department of Health and Human Services

10:00 AM—Government's Role in Fitness for Aging
The Honorable Pete V. Domenici (R.N.M.)
Senate Special Committee on Aging

10:15 AM—The Honorable Beverly B. Byron (D. Md.)
House Select Committee on Aging

10:30 AM—Exercise Break—Jack LaLanne

10:45 AM—What is Aging?
James Skinner, Ph.D., Univ. of Western Ontario
Past Chairman, Amer. Col. of Sports Medicine

10:55 AM—Medical Implications in Senior Sports Activities

Joint Changes in the Aging
James Nicholas, MD, Director
Orthopaedic Surgery, Lenox Hill Hospital

Health and Heart Enhancement
Samuel Fox, III, M.D., Director, Preventive
Cardiology Program, Georgetown University

Exercise and the Post-Menopausal Woman
Barbara L. Drinkwater, Ph.D., Research Physiologist
Institute of Environmental Stress
University of California at Santa Barbara

12 Noon—Blue Room
Master of Ceremonies—Art Linkletter
Speaker—Janet MacLean, Re.D., Director
Center on Aging and Aged, Indiana University
"Too Hot in the Kitchen"
Luncheon Guest—Wes Unseld
Vice President, the Washington Bullets

1:45 PM—Nutritional Considerations for the Active Senior
Regency Room.
Myron Winick, M.D., Director
Institute of Human Nutrition, Columbia University

2:15 PM—Functional Fitness for Older Americans

Physical Fitness for the Elderly and the Tranquilizing Effect of Exercises
Herbert A. deVries, Ph.D.,
Director, Exercise/Fitness Laboratory
Andrus Gerontology Center
University of Southern California

Physical Activity: The Foundation of Youth in Aging
Everett Smith, Ph.D., University of Wisconsin

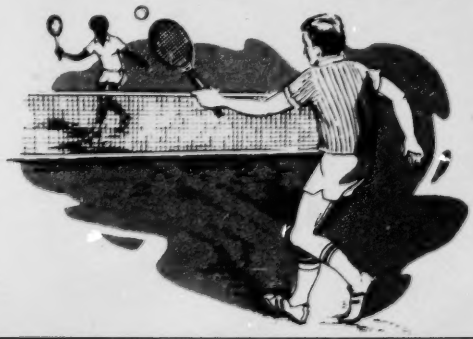
3:15 PM—Exercise Break— The National Capitol YMCA
Teri Domaneski

Stephanie Kendall	Larry Atkins
Laura Price	Mike Miller

3:30 PM—Motivating Seniors
Art Linkletter interviewing some special seniors

4:30 PM—Senior Activity Demonstrations/Programs
Richard O. Keelor, Ph.D., Director
Program Development PCPFS

Recreation—Regency Room
Colorado Springs Senior Center
Lorrie Bensik
RASCALS-a-Dancing
Joan White, Rockville, Md.
Introduction To Tái Chi
Bob and Alice Smith, Bethesda, Md.
Yoga For Flexibility
Ruth Bender, Avon, Ct.
Square Dancing
James and Catherine Ensor, White Hall, Md.



4:30 PM—Programs (cont'd)

Prime Time Program—Disco
Betsy Jacobs-Bethesda/C.C. YMCA

State Programs—Palladium Room
Overview of National Assoc. of Governor's Councils
James Liston, Executive Director
Illinois Governors Council
Lew Lyon, Executive Director
Maryland Commission on Physical Fitness
Wayne Edmonds
Pennsylvania's Governor's Council
John Bates
Blue Cross/Blue Shield of Virginia
Gayle Schnoor
Central Indiana Council on Aging
Senior Sports International
Warren W. Blaney
California

Sports Programs—Hotel Terrace
Swimming: The Ideal Medium for Senior Fitness
Thomas K. Cureton, Jr., Ph.D.
Director Physical Fitness Laboratory
University of Illinois
On-Court Activities for Senior Tennis Programs
Ed McQuillan
USTA Seniors Recreational Coordinator
Martial Arts
Takashi Kushida (8th Degree Black Belt)
Head Instructor of the Aikido Yoshinkai
Association of North America
Ann Arbor, Michigan

Special Programs
"Take Care of Yourself" Program
Gregory Paulson, M.D., MPH
Director, Center on Aging Studies
George Washington University
Movement Therapy for Special Seniors
Michael Linardi
Waxter Center for Seniors
Baltimore, Md.
Calisthenics For Seniors
Charlie Scher
Daytona Beach, Florida
Body Recall—Chair Exercises
Dorothy Chrisman
Berea College, Berea, Kentucky
Exercises For the Non-Ambulatory
Osa Jackson, Ph.D., RPT
Geriatric Section
American Physical Therapy Association

Friday, September 11

6:30 AM—Early Morning Walkers/Joggers
(Rock Creek Park) Liz Elliott

7:00 AM—Exercises—Hotel Terrace
James Levasseur, Manager
Preventive Health and Employee Fitness Center
Department of Transportation

7:30 AM—Continental Breakfast—Ambassador Room
Exhibits Open

8:00 AM—Question & Answer Session—Regency Room
Exhibits Open

9:00 AM—Announcements—Regency Room
Master of Ceremonies—Art Ulene, NBC

9:10 AM—The 'E' In Elderly: Exercise
Robert N. Butler, MD, Director
National Institute on Aging—NIH

10:15 AM—Exercise Break
Jacki Sorensen—Aerobic Dancing for Seniors

10:30 AM—Recreation and Fitness for the Active Senior
John H. Davis, Executive Director
National Recreation and Park Association
Constance McAdams, Chief
Recreation Division, Arlington County, Va.
Clark Thorstenson, Ph.D.
Professor, Recreation Management
Brigham Young University, Utah

11:15 AM—Physical Fitness Programs for the Aging Employee
Dennis L. Colacino, Ph.D., President
American Association of Fitness Directors
in Business and Industry (AAFDIBI)
Richard Finucane, MD, General Foods Corporation
Andrew Letendre, The Travelers

12:00 PM—Luncheon—The Blue Room
Master of Ceremonies—Art Ulene
The Future Is Now
Speaker: C. Carson Conrad, Executive Director,
President's Council on Physical Fitness & Sports

2:00 PM—Wrap-Up Session/Questions & Answers—
Regency Room

3:00 PM—Exhibits Close

SPONSOR'S MESSAGE

For two days beginning September 10, 1981, an agenda of highly prestigious speakers unfolded before 600 delegates who represented senior citizen organizations across the country. The first National Conference on Fitness & Aging, sponsored by Post Cereals and Sanka® Brand Decaffeinated Coffee and presented by the President's Council on Physical Fitness and Sports, provided vital information to the attendees.

Professionals from the fields of medicine, business, nutrition, government and exercise shared important data regarding the significance of maintaining fitness throughout life. According to their presentations, the impact of fitness on physical and mental health and its relationship in reducing dependency on health care services can be profound.

Sanka® Brand and Post Cereals have printed a synopsis of the conference for your information. Moreover, the sponsors have initiated a free sports and recreation equipment offer aimed at senior citizens centers, which can assist these organizations to obtain high-quality apparatus to further motivate people to remain fit.

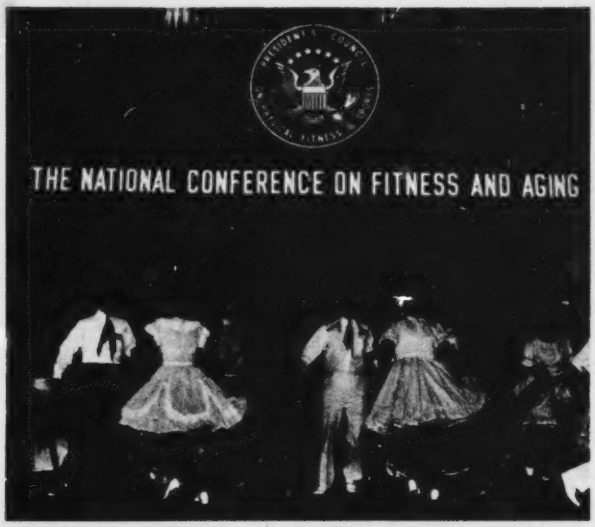
Senior citizens organizations interested in this opportunity can exchange proof-of-purchase seals from Sanka® Brand or Post Cereal packages for equipment outlined in our catalog. You can receive a catalog and additional information by calling 800-435-7678 (except Illinois) or 800-892-1869 (Illinois only). Or you may write to: Golden Age "Fun 'n Fitness" Program, P.O. Box 9250, Kankakee, Illinois 60901.

We hope you find this report a valuable source of information.

COOPERATING AGENCIES

National Agencies and Organizations Cooperating with the Conference

American Academy of Orthopaedic Surgeons
American Alliance of Health, Physical Education, Recreation and Dance
American Association of Fitness Directors in Business and Industry
American Association of Homes for the Aging
American Association of Retired Persons/National Retired Teacher's Association
American College of Sports Medicine
American Geriatrics Society
American Hospital Association
American Orthopaedic Surgeons for Sports Medicine
American Public Health Association
American Red Cross
American Running and Fitness Association
Department of Health & Human Services — Administration on Aging
FBI Academy — Employee Fitness Unit
Federal Interagency Health/Fitness Council
Golden Age Games
Gerontological Society of America
Hospital Research and Education Trust — AHA
Lions Club International
National Association for Human Development
National Association of Governors' Councils on Physical Fitness and Sports
National Association of Mature People
National Association of Senior Sports
National Council on Aging
National Institute on Aging — NIH
National Recreation and Park Association
Section of Geriatrics, American Physical Therapy Association
Senior Sports International, Inc.
The 1981 White House Conference on Aging
Veteran's Administration
YMCA of the U.S.A.


THE NATIONAL CONFERENCE ON FITNESS AND AGING

PRESIDENT'S COUNCIL

KEYNOTE ADDRESS

Richard S. Schweiker, Secretary of Health and Human Services. Schweiker's congressional career began in 1960 when he was elected to Pennsylvania's House of Representatives. In 1968, he was elected to the U.S. Senate and served two terms. He has sat on a number of governmental committees and initiated legislation for health-care reform. While serving on the federal Operations and Armed Services Committee, he wrote "How to End the Draft," which was instrumental in the creation of the volunteer army.

Never before has keeping our people fit in their elder years been more important to us as a society as it is now. Originally, the President's Council on Physical Fitness and Sports was created because Americans were worried about the poor performance of youth in standardized physical tests in the mid-1950s. And then in 1963, the Council broadened its work to promote adult fitness. Today, the Council has taken another giant step ahead by lending its prestige and its visibility to the cause of fitness for older Americans.

I believe that what we have to do now is build on the encouraging trend in fitness by focusing on the area where fitness can pay the greatest dividends. We need to focus on physical activities for the elderly. For years it's been common for historians to describe the world as coming of age in one sense or another. We've come of age in technology; we've come of age in medicine; we've come of age in politics. This conference shows that for the first time we're beginning to appreciate the fact that the physical coming of age of our own American population is a watershed in our nation's history. Suddenly, we're sitting up and taking notice of the aging process in America.

Medical, scientific and social advancements have blessed our people with longer and healthier lives. As Americans grow older, we need nothing less than a rethinking of attitudes. Although the United States is more than two centuries old, it was only after we moved into this century that Americans began to "gray." It took a while for it to become evident, because so many technological improvements were happening that almost seemed to contradict the aging process.

Five Million Older Americans

During the horse and buggy days there were fewer than five million older Americans. A husband and wife could expect one of them to die even before their last child left home. The graying of America was of little concern when the average life expectancy was only 47 years. In a nation filled with relatively young, blue-collar citizens in those days, there wasn't much need to care about fitness. Even today we've been infatuated with youth for so long that some people, especially in other nations, think of America as being a perpetually young society. We have a restless, young-pioneer tradition.

Our young people set worldwide standards for what's in, what's new and what's popular; yet, the fact is that our once small elderly population of five million has increased to 34 million and it's still increasing. For the first time in our history, last year Americans over the age of 60 surpassed two other age groups – children who are 10 and under and teenagers. When we talk about fitness and aging, we're not talking about a small group of grandparents, but millions of people in every city and town.

As Secretary of Health and Human Services, I am vitally concerned about how the aging trend will affect America in the coming years. Key questions must be answered about the role of the elderly in our youth-oriented culture. For example, can we change the very definition of elderly as our population grows older? Can we enhance the extra decades of life that Americans will be living? And finally, can we tap the skills and experience of our older citizens so they'll serve as an even more important productive force in our society? My firm belief and the belief of the Reagan Administration are that we can project bold new ideas to use that aging trend in our country to everyone's advantage. New approaches to work, health and physical fitness are among such ideas. Central to this is the idea that elderly citizens have great self-pride and prefer incentives to hand-outs, provided they are physically able to lead productive lives. Rather than accepting the trend toward early retirements, for example, we can provide positive incentives for continued earnings and age-appropriate work opportunities as our lifespan increases. For example, the Administration has proposed phasing out the Social Security Earnings Test, which unfairly penalizes older persons who want to remain in the labor force so they can supplement their Social Security benefits. Also, rather than accepting the trend toward skyrocketing medical costs, we can provide incentives for preventive health care to keep people healthy longer.

Prevention of Fatal Diseases

The National Institute on Aging, for instance, has found that many killing diseases, such as heart attacks, strokes, and kidney and bone diseases, can be prevented by personal efforts, such as exercise and fitness, without massive infusions of federal funds or new scientific breakthroughs. In fact, some very interesting studies show that most people make daily decisions that influence their health and vitality far more than all of today's medicines. One of the most

important studies was conducted by Dr. Leslie Brewlow of UCLA. Taking place in Alameda County, California, it lasted 10 years and dealt with more than 7,000 men and women. The study showed that by observing five simple health practices – not smoking, using alcohol in moderation, eating a proper diet and getting the proper amount of sleep and exercise – a 45-year-old man can expect to live 10 or 11 years longer than the individual who doesn't monitor his habits. Women who observe these same health practices can expect to live seven years longer. Therefore, what we do for ourselves and to ourselves can be a tremendously powerful influence on our own health.

Historically, the focus has been almost exclusively on acute health care and treating people after they get sick. But now the Health and Human Services Department has begun to focus on the prevention of illness. We've developed a preventive health-services block in the latest group of bills that was passed in Congress. We're initiating prevention-oriented training programs for health professionals. We're encouraging the food industry to continue improving consumer labeling on food contents so that people can regulate their consumption of various ingredients, such as sodium, which can affect their health. And we're stepping up our health promotion efforts to let people know what a difference in their own lifestyle personal decisions can make.

A number of other HHS programs contribute to this goal. For example, the Older American Act provides funds for senior citizen centers around the country where older Americans can receive nutritious meals and nutrition information. Some senior centers also have extensive recreational and fitness programs, which encourage older people to remain active and healthy. Your concern for fitness goes hand-in-hand with those efforts.

In addition to encouraging people to remain healthy, we're also collecting data about older people. We want to find out what differences exist, if any, between the relatively few older persons who get care through formal systems, such as nursing homes, and the large number who receive care informally through spouses, relatives, friends and neighbors. We know that today only 5 percent of our elderly are institutionalized. Another 10 percent are covered by government programs, which include transportation, counseling and daily meals. But what about the millions who aren't using the federal programs? We must find out what they have done to prepare for the graying period of their lives. By learning more we can help guide the elderly of the future.

Another part of our aging policy is to expand our scientific knowledge about the basic aging process. Major efforts at the National Institutes of Health, Food and Drug Administration, Alcohol and Drug Abuse Agency, Mental Health Administration and the Center for Disease Control are directed to my department. In particular, the problems and programs of the National Institute on Aging within NIH and the Center of Studies of the Mental Health of Aging are doing excellent research in this very area right now.

Finally, in terms of this Administration's efforts, I'd like to cite the overall federal budget for our aging program. Under the president's revised 1981 budget, the elderly will receive at least $168 billion, a very substantial share of our resources. This amount rises to 13 percent of the proposed 1982 budget – up to $190 billion. Older Americans who comprise 11 percent of the population will receive 27.5 percent of the federal budget.

Some initiatives can come from government. There are many others, such as the recent enactment of the president's tax-cut legislation that expanded individual retirement accounts, thus encouraging savings for retirement. But no initiative is more important than the new awareness of how physical fitness can help keep older Americans independent, healthy and fulfilled.

Physical fitness – knowing that your body is capable of doing more than the stereotype says it does – breeds confidence; confidence, in turn, brings mental fitness. The end product is greater human dignity in every aspect of daily life.

GOVERNMENT'S ROLE IN FITNESS FOR THE AGING

U.S. Senator Pete V. Domenici, who serves on the Senate Special Committee on Aging, was elected to Congress in 1972 and re-elected in 1978. A highly active legislator, he holds the chairmanship of the Senate Budget Committee and the Energy and Natural Resources Committee's Subcommittee on Research and Development. A native of Albuquerque, N.M., he was active in local government, having served as chairman of the Albuquerque City Commission.

One of the most important things we can do to improve the quality of life for elderly Americans is to help them maintain physical fitness. As chairman of the budget committee in the U.S. Senate, and as a member of the Senate Special Committee on Aging, I have a good perspective on the problems of the elderly.

A few figures might indicate why physical fitness is such an important topic for the elderly. National health expenditures for Americans 65 and older have reached about $50 billion. To appreciate the magnitude of that number, consider the fact that the amount of Social Security checks sent to all eligible Americans has reached $140 billion. It is then conceivable that every Social Security recipient aged 65 and older took more than a third of his Social Security check each month and paid nothing more than medical bills and related expenses with it.

In terms of the cost of keeping healthy, older Americans spend 3.4 times as much on a per capita basis each year for medical care than other Americans. Some of these differences can be attributed to the fact that growing older subjects people to more physical problems. However, a significant portion of the $21 billion that went to hospitals in fiscal 1979, much of the $13 billion that the elderly spent on nursing-home care that same year, and much of the $9 billion given to doctors and physicians care could have been saved. Billions of dollars that come from the pockets of senior citizens and taxpayers could be saved each year if we concentrated on physical fitness and recreation for the elderly.

Beyond the expense, the failure to provide more physical fitness opportunities for our citizens and to make education in fitness available to the elderly is costing America a tragic number of lives. We might have saved many of the 537,000 Americans aged 65 and older who died of cardiovascular disease in 1978 if we had concentrated on their physical fitness.

True fitness habits are those learned early and continued throughout life. The best prevention for premature death is the teaching of lifetime recreation and physical fitness activities to our young. But as a nation, we have been late in coming to that realization. For those millions of Americans who are now elderly and who have never been given the opportunity to participate in lifetime recreational activities, now is the time for re-education.

We can stop premature aging, add years to lives and save billions of dollars for everyone in our nation if we simply walked a few miles every day. For millions of elderly Americans, those savings could result in more money for food, housing and continuing education – and most important, an improvement in the quality of their lives.

U.S. Representative Beverly B. Byron has served Maryland's 6th District since 1978. A member of the House Select Committee on Aging, she is current Chairman of the Maryland Commission on Physical Fitness. In addition, she serves on the House Armed Services Committee and the House Interior Committee.

This conference is giving everybody an opportunity to participate at whatever age and giving them some kind of a goal and a challenge, whether it's to walk that first half mile, to be able to go around the block or for some of our senior citizens, giving them the opportunity to be able to be fit enough to walk to the mailbox, so when their Social Security checks come at the end of the month, they'll be able to collect them.

Those individuals who have made a lifelong commitment to fitness know that their later years are the better of their lives.

Fitness doesn't start on one particular day, it starts very early in life – the day we first arrive. If we can instill in younger people a commitment to fitness, then that attitude will be firmly implanted when they become senior citizens. And those who deal with the aging will then have

a much easier job.

That is why all of you are involved in the President's council. Because if each and every one of you picks up one or two people with an involvement in fitness it mushrooms. We have already seen that in the last 25 years since this Commission has been active there has been a tremendous increase in our awareness and commitment to fitness.

So I think that is why we're all here, to improve the quality of life for those individuals who get older. We're finding nowadays that there is a larger population of older Americans and we're finding that the quality of life for those older Americans has to be the very best.

WHAT IS AGING?

Dr. James Skinner received his B.A., M.S., and Ph.D. (1963) from the University of Illinois, Urbana. He has served on numerous committees, among them: Canadian Association of Sports Sciences, MOGAP (Montreal Olympic Games Anthropological Project), and is currently a member of the American College of Sports Medicine where he was president during 1979-80. Dr. Skinner has published articles in French and German as well as English and has been a professor with the Faculty of Physical Education at the University of Western Ontario since 1977. He lives in London, Ontario, Canada.

Aging is a complex and sometimes controversial topic. There is a psychological as well as physiological aspect – we all know people who are 30 going on 60, and 60 going on 30. That is due, in part, to their lifestyle and their outlook on life. But from a physiological point of view, aging is an accumulation of a number of structural and functional changes that take place in the body.

Although most people equate aging with the onset of problems, physical changes start to occur at birth.

Till the age of 25 or 30, the individual experiences growth; then effects of the aging process begin to be noticed. If you examine any particular unit of the body, there tends to be a loss in size or number of functional units. Because the units that remain don't function as well and are fewer in number, aging can be characterized by a decreased ability to adapt to and recover from physiological stimuli – including exercise. The older person takes longer to adapt to and recover from exercise, which is why warm-up and cool-down periods are so much more important for the elderly than they are for the young.

It is very difficult to isolate the pure effect of aging. For example, if a 60-year-old individual goes to a physician and says that he is breathless walking up stairs, the physician doesn't really know whether it's because he is 60, he is deconditioned or he has some disease. The problem in trying to examine the effects of age is that disease and deconditioning due to sedentary living also have very similar effects on the body.

Generally speaking, there are a number of changes that take place in the body. As they get older people tend to be fatter and, losing the number and size of muscle fibers and nerve cells, they become weaker and slower. At the age of 25 or 30 there is a drop-off in strength and speed. Other functions such as flexibility, balance, agility and coordination don't work as well, either.

There is also a drop-off in a number of functions relating to the respiratory and cardiovascular systems. An older person has no problem with very mild exercise, but intense exercise may give him problems. The heart has to work harder against increased blood pressure and the maximal heart rate goes down after the age of 25 or 30. The heart can't pump as much blood and therefore it can't get as much oxygen to the muscle, where it's needed. The transport system is thus diminished.

At the cellular level in the muscle itself (where the oxygen is used), there are changes in the parts of the muscle that produce energy. The enzymes there are less effective with aging; what happens is that not only do such anaerobic activities as short sprints decrease with age, but also prolonged endurance activities. The older person is usually only able to perform in lower intensity activities, where the ability to provide energy is not really diminished.

Because training is a form of adaptation to repeated exercise, and because aging is associated with the reducibility to adapt, it stands to reason that the ability to train will be less in the older person. The older person does tend to improve less, and it takes longer to improve. However, that doesn't mean he can't adapt.

What is more important is that the individual maintain a lifestyle, and then he is able to do many of the activities he enjoys.

In conclusion, I would like to pose a question: How old would you be if you didn't know how old you were? I think the key to being young is physical activity to counterbalance the physiological changes that are inevitable; but the psychological aspect is very important, as well.

MEDICAL IMPLICATIONS OF FITNESS AND SPORTS FOR SENIORS

Joint Changes in the Aging

James A. Nicholas, M.D., director of orthopedic surgery at Lenox Hill Hospital, New York. Dr. Nicholas is one of the most highly respected and knowledgeable practitioners of sports medicine in the world. He is team physician and orthopedic consultant to a number of professional sports teams and author of numerous articles. Dr. Nicholas has been a key figure in many seminars, conferences and educational courses. He received the Physicians Recognition Award from the American Medical Association, in addition to being listed in "Who's Who in Science," "Who's Who in Medicine" and "Leaders in American Science."

One of the most important but misunderstood areas of gerontology is the relationship between aging and the changes in joints that come with it.

The function of a joint is extremely important in the movement patterns of exercising individuals, active in gait or in sports. It is a key to maintaining physical fitness at all age levels. Little is known about how joints age because different joints have different demands on different people.

One difficulty is the inability to separate aging per se from concomitant disease processes, such as arthritis, which become more numerous with the passage of time. As pointed out by Dr. Herbert deVries, the sedentary nature of individuals is such that it is difficult to find an old population to compare with the young on equal activity levels.

Finally, we do not have a long-range study of individuals that will also draw conclusions we can accept. Nevertheless, there are a number of changes occurring with age that are important to understand.

Age is accompanied by functional and structural changes in most tissues, and the joints are no exception. In addition, aging joints frequently have been damaged and recovery is slowed down.

Anatomical Structure of Joints

Let us examine the anatomical structure of joints. All joints are forms of connective tissue. They actually can be viewed as having an organ-like function or support in motion. They're composed of a matrix with a gel-like ground substance in which there are fibers or collagen. Joints are made up of connective tissue structures that cross from one side of the surface of the joint to the other and are called ligaments. Other structures band across the joints and move them – these are the muscles and tendons. Within the joint surfaces, particularly the weight-bearing surfaces of the body, in most cases the articular surfaces are covered by cartilage. Between the articular cartilage of the joints there are **menisci** or disks. They are particularly well-visualized and clinically important. They are found in the knee, where they are important for the normal function of gait; in the spine; in the acromioclavicular joints of the shoulder; in the jaw; in the wrist; and in many other joints.

Many joints have different types of structures for which certain classifications have been made, segregating them on the basis of special characteristics. But basically, they are still composed of connective tissue, capsule, ligament, cartilage and bone units. Within the joints there is another specialized connective tissue structure, known as the **synovia**. It produces a fluid of the joint by which the articular cartilage and the menisci receive their nourishment.

Joints or organs with multiple structures and functions are therefore subject to stress and wear of life and aging.

Changes in the muscles with aging have also been observed, particularly by Molar and his group. First, skeletal muscle loses strength and muscle mass with time. Part of this loss is compounded by disuse and deconditioning.

Energy-rich Compounds

Finally, energy-rich compounds decrease with age in the intramuscular cellular concentrations, particularly phosphulcredin. From this, one can infer that with age, muscles lose some of the ability to function as maximum components of strength, power and endurance, which will affect joint function. Such aging is determined to some extent by the tissue composition around the joint and by the ability of the different structures to control joint function.

The effects of decreased metabolic functions are ultimately translated into loss of power, loss of strength, loss of motion and loss of stability, as well as loss of flexibility. All joints connect bone, which is the final component of joints.

Aging is known to produce the inability to form bone, a process called **osteoporosis** or **osteopenia**. This starts in females somewhere around menopause and in males a decade later. Osteoporosis and the aging of cartilage and bone enhance erosion to the cartilage in your joint. This is due to the loss of strength in bone and the inability of cartilage to withstand trauma.

Connective-tissue aging, particularly the disintegration of collagen, produces bone tendon and bone ligament weakness at the attachment sites. However, what is remarkable about articular cartilage is that in many older people and animals

it can remain normal after many decades of hard use if it is not injured in the course of life. When it is injured, pitting, opaque and corrosive changes, and loss of diffusion through the joint occur. This interferes with joint nutrition and can be likened to an arteriosclerotic artery.

In terms of degenerative joint disease, there are a number of factors occurring with damage to articular cartilage that we associate with osteoarthritis. First, there is fibrillation, with increased cracking of the surfaces of the articular cartilage, leaving a cleft formation. Softening occurs and loss of elastic support is followed by the inability of the cartilage to deform and rebound. Calcification may develop. Eventually, the joint has a decreased joint space with decreased joint movement. This produces clinical symptoms in time that we associate primarily with early-morning stiffness and the production of fluid after exercise.

The degenerative processes of the joints commonly associated with aging are also produced by direct trauma. Fractures occur more readily over the age of 40 and the ligaments elongate with time, producing instability. Then overuse produces compression, altering joint mechanics.

These extrinsic factors are superimposed on the genetic makeup of the individual. What results is a bow leg increasing its bow or a knock knee increasing its knock after injury due to weakness with overuse.

Endocrine Disfunction

Finally, there are individuals who have endocrine disfunction and early aging of cartilage. For example, individuals who have excessive pituitary function, such as an acromegaly, will get thick cartilage, but poor joint configuration and resistance to load. Poor nutrition results, fragmentation with arthritis occurs early, and the classical results of such aging may develop by the time one is 20 or 25 with swelling, stiffness, pain and increasing weakness, until the joint breaks down and requires definitive treatment.

The aging of specific joints, as elsewhere, is characterized by atrophy. In the spine this produces loss of normal curves and loss of height due to shrinkage of the disks and softening of the bone adjacent to the disks. The spinal disks are made up of a particular specialized structure that exerts a bulging effect. When you're up a great deal, it bulges more; when you rest, it shrinks. If you sleep for four or five days, you gain a half-inch in height. If you're up for 22 hours, you lose a half-inch in height.

This produces a load against the annulus fibrosis, which is a connective tissue covering the joint, and the annulus and nucleus lose water content with age and shape. Sometimes the nucleus – the central portion – exerts too much pressure. As a result, this can bulge or rupture and produce a protuded or herniated disk, which is almost a universal disease.

Other important articular structures are the weight-bearing joints. In the knee, as discussed previously, the deformity of bow leg increases with relaxation of ligaments and softening of subcondyle bone. This is very commonly seen with age and further decreases height. The end result of the aging joint, therefore, is a decrease in the ability to resist demands of physical activity by long muscle levers, which work to develop force across a short or deformed segment.

In the cardiovascular training and fitness programs that we so strongly advocate we may be hindered more by our joint aging than by any other factor. We must consider this in our exercise prescription. With a decline in joint flexibility as we age, there is decreasing stability, decreasing mobility, decreasing power, increase in deformity and decreasing resistance to load. With this arthritis may develop.

All training programs must assess joint function in relation to a desire for fitness programs. Since joints are made up of connective tissue, the makeup of the joint matrix itself allows deformation, as well as resistance of force. Connective tissue cells allow metabolic function associated with work to occur, but with aging the protein fibers become thicker. There is an increase in the cross linkage of matrix. The collagen or the fibers become more stable and thicker, and the membranes thicken around the joint.

Once again we have cause for stiffness, because a more rigid joint will result from these changes and secondary muscles, both above and below the joint, anywhere in the body. Joints must be protected from overload if we are to maintain their integrity. Flexibility training to provide and counter contractions must be given. Specific joints throughout the body linking the legs and arms to spine, ribs and pelvis have adapted changes best fitted to their specific functior

Joint Linkage

In exercising, we must recognize the weak, as well as strong, components of the joint linkage in our body, aging joints, cartilage and **synovia**. In response to age both bone and **synovia** change, as has been pointed out. Aging starts in the articular cartilage between the ages of 20 and 30, and sometimes even earlier. Indeed, many cartilages begin to gray and are damaged by even mild trauma in the second and third decade. Cracking, fraying, shredding, fissures, decreasing ability of cartilage to form and recover, and low-order metabolic deficiency result in torn cartilages or **condylomatia**. The **synovial** fluid bathing the joint, so vital to joint metabolism, decreases its viscosity. These changes don't allow the sugar and oxygen into the cartilage to diffuse it readily. The **synovial** membrane that becomes more fibrous with age will enhance the insufficiency metabolically in an attrition of the aging joint.

The most susceptible joints to these changes, and this is important for runners, are those that bear weight: in particular, the big toe, the knee, the hip and the vertebrae. The upper extremity joints, which are also non-weight bearing unless you are accustomed to doing a great deal of push-ups, work against resistance on the floor and are more tolerant to damage.

Aging also affects the ligaments of joints, as well as the tendons of the joint. Ligaments have the capacity to resist

stretching like a rubberband and elongate and retract to protect joints from over-rotation in all three axes, which we call the X, Y and Z axes. In the over-40 age group it is more likely that the bone will tear at its attachment to the ligament, rather than the ligament itself. Therefore, it is unusual to see surgery done over the age of 40 for torn ligaments. The loss of ligament strength occurs for the same reasons as mentioned before; namely, connective tissue aging with decreased strength and increased elongation with use.

Apart from the symptoms that were mentioned in the 35-to-40 group, there are other tell-tale signs of joint aging. One is the decrease in spacing between the bones. Secondly, there is a decreasing range of motion, especially seen early in the hip, producing a decrease in internal and external rotation. For example, a good test is if the ability to sit in a lotus position decreases over the decades.

Contractions develop in the spine, the pelvis, the thighs and in the muscles that power the joint laterally and behind the hip. There is decreased density of the subcondyle bone X-ray, and there is early cyst formation. Thereafter, osteoarthritis accelerates and it's most commonly found in the hip. With arthropathy, one can see fragmentation and cyst formation. For example, under the patella we see shedding at the very top. This produces a susceptibility to tears and there is decreased movement because of it in the motions of sports, in particular for those who run, walk, jump and throw.

Therefore, we see tennis players who are not able to get their arms behind their head or who have elbows that cannot fully extend. We see runners who cannot have as long a stride or as sharp a cut. When those over 40 play tennis, run or dance they have to accommodate these movements by decreasing their range, taking shorter steps and by decreasing arcs of tennis serves, thereby producing less power.

In discussing treatment programs, we should not stereotype the elderly as sedentary. We should take note that the passage of time and the particular medical and activity history of the individual play a vital role in what his exercise prescription should be. The aging can enjoy life and stay as healthy as possible, thus helping to prevent the aging of joints.

One of the most important ways to prevent joint aging is to maintain movement. This means maintenance of flexibility, whether it is in aquatics, dance or calisthenics, with or without intense aerobic activity.

Another important prescription is to maintain strength. This requires strengthening certain muscle groups in specific ways because they control joint function. In particular, the antagonistic muscles are neglected in this country today in strength programs. Weight-training programs must be specifically designed not to overshear and overcompress joints, and they must be trained to develop secondary muscles, both in the upper and lower segments of the body. It is important in training to recognize that the joints are articular links to the joints above and below them. Therefore, one must prescribe exercise that involves the entire spectrum of all the joints and not simply focus on the joint in motion.

The tendency with many physicians and therapists is to emphasize only quadricep exercises for the knee, when actually the hip flexes must be strengthened even more so than the quadriceps. For this reason duck walks, the lotus position and jumping activities in symptomatic knees are not a good idea until the joints have been rendered symptom-free and total rehabilitation has taken place.

Aging Joints

Finally, the issue of aging joints can not be discussed without recognizing that different individuals use different joints for different reasons and in different quantities. Therefore, we must not forget the linkages and specific joint demands from fingers to hands. If you throw, the ball forces a load into your fingertips all the way down to your feet. We call that the linkage system, whereby the hands, wrist, elbow, shoulder, spine down to the hips, knees, ankles and feet may all be affected by the performance.

For example, in a tennis stroke all of these joints will be involved in the linkage system. It suffices to say that motion with tolerance and strength with prudence are keys to maintaining joint function for an individual who wants to participate in the fitness program, whether it's through running, walking, dancing or sports.

We must understand that the studies of the human aging of joints are difficult to evaluate for reasons mentioned before. Some people have stronger, more efficient joints than others. Whether one is tall or short or fat or thin plays an integral part as to whether a joint ages more rapidly from overuse than another. So do such factors as misalignment, genetic differences, asymmetric time changes, the athletic ability, the frequency of performance and the effect of early microtrauma. They are changes compounded by aging. That is why the orthopedic examination today is a key part to any pre-participation physical at any age.

We must remember the six P's and how interwoven they are in life, sports, aging and exercise: namely, performance to man, pathology, the practitioner, the prescription, the practice and the profession.

Health and Heart Enhancement

Samuel M. Fox III, M.D., director of the Preventive Cardiology Program, Georgetown University School of Medicine. Before embarking on an academic career, Dr. Fox spent many years in federal service. Beginning as a medical officer in World War II, he concluded his tenure with the government in 1970 as chief of the Public Health Service's Heart Disease and Stroke Control Program. He has taught at the University of Pennsylvania, George Washington University and at several foreign universities.

Over half of the deaths of all Americans – indeed, of the populations in most developed countries – are attributable to coronary artery disease and other cardiovascular diseases. They include disabling strokes that not only limit what we can do physically, but what we are able to do mentally in enjoying and participating actively in life.

Just under a million deaths per year are attributable to cardiovascular disease. The majority of the people are over 65.

There are a sizeable number of risk factors that seem to contribute to the astrosclerotic disease process, which is the laying down of fatty material in the inside of arteries. This condition causes obstruction to flow and limits the supply of oxygen to the tissues, be they muscular tissues or brain. Such factors that influence the diseases are out of our control. We also have difficulty measuring the effects of emotional stress and strain on the development of diseases, particularly cardiovascular diseases.

Unfortunately, the diabetic is predisposed to premature blockage of the arteries and other problems, but exercise is one of the best ways of handling the metabolic abnormality in the diabetic. In fact, the demands for insulin and other things to regulate the metabolic processes can be reduced with a good exercise program.

Smoking, as we are well aware, is also detrimental. The data is so overwhelmingly convincing that there is little question as to its effects.

Hypertension is the risk factor on which we fortunately have the most data. There is incontrovertible proof that the proper management of even mild elevations of blood pressure will diminish the manifestations of cardiovascular disease and prolong an effective, useful and happy life.

Serum lipides in the alteration of diet is still under investigation. I, as well as most of the cardiovascular community, am convinced this area of study is worthwhile. There is solid evidence indicating obesity is something that when reduced, adds to the longevity, potential and the activity capabilities of individuals.

All these risk factors are contributory in an interlocked manner, perhaps. I would like to further discuss how physical inactivity is a risk factor in cardiovascular and other chronic diseases.

In the 50s and even in the 40s there may be an ability to develop signs of insufficiency of the cardiovascular system with an exercise tolerance test or stress test. Even before that, we can characterize people at risk relative to elevated serum lipides, blood pressure or imprudent habits.

What happens too frequently is that people, before they really approach the elder years, move rapidly to the clinical manifestations of chest discomfort on even moderate exertion, myocardial infarction, loss of heart muscle or perhaps even loss of life in the 50s and 60s.

What, of course, is desirable is to retard the process or reverse it. Unfortunately, we cannot even characterize those individuals who, by genetic good fortune or other means, are at such low risk that they can eat what they please and enjoy a life of inactivity. Perhaps it's fortunate because it stimulates us all to be conscientious about our living habits. The encouraging news is that from 1950 to 1980 there has been a defined and very well-substantiated decline in cardiovascular disease. Indeed, since 1968 or thereabouts, there has been a decline in the mortality from non-cardiovascular disease, but of a lesser sort.

As evidenced by a Harvard University study, there is a significant relationship between the extra calories consumed per week by individuals in later-life activity and what happens to them as regards fatal and non-fatal heart attacks. Those in the study who expended 2,000 kilicalories or nutritional calories per week in excess of their basal requirement had 64 percent less occurrence of total heart attacks.

However, that is the equivalent of running, walking (vigorously) or jogging three miles a day. While this level of exercise may seem beyond the usual aspirations of a senior citizen, nonetheless, there are important benefits associated with a lesser amount of physical activity. That includes swimming, tennis, hill-climbing, specific vigorous dancing, gardening, brisk walking and bicycling.

Some of the potential benefits that occur with an increase in physical activity are increased physiologic capacity and greater physical performance capacity. Other physiological advantages are lower heart rate; lower rate and depth of breathing; better air passage and lung function; greater efficiency of the total body, particularly the cardiovascular and pulmonary mechanism; and less perceived effort, which means every task we undertake is less burdensome if we maintain functional reserves.

Enhanced blood volume in cell mass and more appropriate blood distribution and return were also thought by the Swedes in earlier work to be considerably increased with physical activity.

Also, better adaptation to temperature, both heat and cold, comes from physical activity. There is a stimulus for

increasing the arterial side so that any obstruction would be less damaging.

Decreased vulnerability to rhythm disturbances in the heart is of considerable significance from the standpoint of function in older as well as younger individuals.

The psychological benefits of increased exercise are just as important. Enhanced feelings of energy, enthusiasm and well-being, and more intellectual and emotional stamina result; decreased depression, enhanced self-image, less strain resulting from psychic stress, better relaxation and sleep, more satisfactory sexual responses and less craving for stimulants and tranquilizers, such as cigarettes and coffee, also occur.

While socio-economic benefits, increased optimism and enthusiasm in creativity have yet to be firmly proved with an increase in physical activity, many of us are convinced it just takes better studies to develop the information. Greater productivity would be of greater importance to the work force to provide a justification for programs in industry and business; less absenteeism, a shorter illness course, fewer complications and perhaps reduced medical expenses could also be the positive "side effects" of exercise.

Exercise and the Post-menopausal Woman

Barbara L. Drinkwater, Ph.D., research physiologist, Institute of Environmental Stress, University of California at Santa Barbara. Dr. Drinkwater is considered one of the nation's foremost authorities on the physiology of the female athlete. She has lectured and written extensively on subjects relating to women and athletics.

The decade of the seventies was one of discovery, when our society finally realized that vigorous, physical activity was not unladylike.

We also discovered then that sports can be a valuable learning experience for women as well as men, although the novelty of seeing women running marathons, climbing mountains, riding racehorses and even playing football caused a lot of discussion, particularly in the media. Controversy ensued over whether women could compete equally with men, run a four-minute mile or play on a professional basketball team.

In this battle of the sexes the important question was really lost. Does the woman gain the same benefits from exercise that a man does? The answer to that question is, of course, yes. She gains strength. She increases cardiovascular fitness, she becomes more flexible, and long before our sophisticated instruments can pick up any of these changes, she reports feelings of well-being, just as men do.

One important difference between men and women, however, is medical; it is known as the menopause.

The menopause is a striking physiological marker in the life of a woman. Whether it is surgical menopause as a result of removing the ovaries or natural menopause that most women experience in their late 40s or early 50s, it is a very marked physiological change due to the decrease in ovarian function, with the resulting decrease in estrogen and progesterone levels.

Two important questions need to be asked in relation to menopause: Does this change affect the woman's capacity for exercise, and is it possible that activity might be useful in ameliorating some of the symptoms and some of the changes that do occur?

Seventy-five to 80 percent of all women experience some menopausal symptoms; 10 percent of them will have such severe symptoms that they will be unable to maintain a normal daily routine.

The most common symptoms and the ones that cause amusement in the non-afflicted are hot flashes and sweating episodes. They are simply representative of some of the changes that take place in the autonomic nervous system. Some women also experience palpitations, dizziness and tingling in the extremities.

In the psychogenic area, it is possible to find depression, insomnia, headache and irritability. In the third area, the metabolic, there is the occurrence of osteoporosis, tissue changes and an increase in arthrosclerosis. There is also the possibility of a decrease in carbohydrate tolerance.

These symptoms may be serious enough for consideration by those who are concerned with exercise programs for the aging woman. According to one authority, before the age of 45 the possibility of a woman fracturing a forearm is exactly the same as a man. But after 60 a woman has a 10-times greater chance of fracturing a radius. Twenty to 30 percent of post-menopausal women have severe orthopedic problems and the dowager's hump or vertebral fracture, where a series of fractures in the vertebrae actually cause the kyphosis and, in extreme cases, actually cause a rib cage to end up resting on the iliac crest. These are serious problems.

About 180,000 to 200,000 women have hip fractures

every year and about 20 percent of these women die from complications. Post-menopausal osteoporosis is a major health problem and it's a major burden on our health-care system, with a cost usually exceeding $1 billion a year.

The cost of post-menopausal osteoporosis is a decrease in bone-mineral content, year by year. The male, who incidentally has a higher bone-mineral density, maintains it until the post-70 years.

Therefore, the fractures that women experience are not due to the fact that they suddenly take up skydiving or gymnastics; it is simply due to the increased fragility of the bones.

There is also epidemiological evidence that the incidence of fatalities from coronary heart disease increases in this population. Before the age of 50, men had a 10-times greater chance of dying from a heart attack than women. After the age of 50 and before the age of 80, the two sexes are even in the chance of dying from a coronary.

One tends to think of heart attacks as a male problem, but the relative immunity of women to heart attack seems to disappear after the menopause. So, obviously some of the changes that occur with the menopause are not just uncomfortable or embarrassing, as the hot flashes are supposed to be, but dangerous to a woman's health.

At the beginning of the century there wasn't much of a problem because the average lifespan for a woman only extended about five years beyond the menopause. But now women can look forward to approximately 25 additional years. The question that now faces women is: How can they maintain the quality of life during these extra years?

One solution is the use of hormone replacement therapy. Indeed, this therapy relieves some of the overt symptoms, particularly those related to the autonomic nervous system such as hot flashes, sweating and tissue changes. It also provides some protection against osteoporosis. But the use of estrogen alone has been linked to a greater incidence of uterine cancer. Many women are now hesitant to follow that course of activity.

Their decision, however, is not made easier by the lack of information regarding relative risk. For example, if using estrogen is associated with an incidence of four cases of endometrial cancer per 1,000 women, what then is the relative risk of developing osteoporosis to the point of having a disabling fracture or even of dying from the complications? We don't have that information.

Some authorities believe that calcium supplements are useful in preventing osteoporosis, as useful, as estrogen therapy. While the supplements are useful, estrogen therapy provides better protection. We are also finding that exercise results in strong benefits for women aged 70 and older.

LUNCHEON ADDRESS

Janet R. MacLean, Re.D., professor of recreation and director of the Indiana University Center on Aging and Aged. Dr. MacLean is widely recognized as one of the nation's foremost authorities on gerontology and leisure. She has led countless workshops and seminars on aging and social recreation, and was responsible for initiating the Center for Older Americans in Indiana under Title III. In addition, she has been a delegate at numerous White House Conferences on recreation for the aged and has been education consultant and speaker for the National Council on Aging.

Literature today abounds with a variety of recipes for successful retirement. However, there are no correct proportions of this or that for living the good life in old age. The sociological environment in which today's elderly find themselves has to be examined carefully. In spite of Harry Truman's advice – "If you can't stand the heat, get out of the kitchen" – I would suggest that many aged, often through no fault of their own, can find no easy door to make that kind of exit. Whatever your age or career commitment, it's important to pay close attention to what's cooking in that kitchen; not only because we live in a country that has a constantly growing population of aged; not only because we ourselves have improved chances of an elongated lifespan; but because the concerns of the aged in our country are affecting or can affect us right now – politically, financially, socially and psychologically.

Old age doesn't occur in a biological vacuum. The quality of life after 60 is shaped not only by our genetic heredity but by the social, cultural and economic environment in which we find ourselves. Fortunately, we have more chance of control over that environment than we have over our genes.

Problems

Many of the problems that exist, both for the aged and for those who wish to improve the quality of their existence, stem from the structure and functioning of our society. And as members of that society, we have a responsibility to be aware of those conditions and to gain input into creative alternatives to those problems. As we enter the last two decades of this century, let's look at some challenges and concerns that relate to those who have entered what one person calls the "Metallic Age": gold in your teeth, silver in your hair and lead in your pants.

It is very apparent that concerning the challenges of old age, the future is now. It doesn't represent some pot of gold at the end of a colorful arch; it's not some condition that arrives with a resounding symbol or a blinding light. Satisfactions or dissatisfactions in the future have their origin in how we are dealing with the present, and that "we" includes all of us. We all are or should be cooks in this sociological kitchen.

Currently, there are more people who are old as defined by years. The combination of decreased birth rates, decreased death rates, better diet and improved medical advances have combined to skewer the population curve toward the upper end of the aged spectrum. But can we conveniently categorize that segment by chronological age alone? Let's face it – we don't all age like cheese. In terms of programming we've found that health, educational level and past experience are far more valid predictors than chronological age.

There are problems when we label as "aged" all those over 65, simply because Chancellor Von Bismarck 100 years ago decided that was a convenient social time-line for Germany. Realistic projections for the year 2000-2010 when World War II babies reach age 60-65 show an even greater imbalance in the population curve than we have now. And as a society we must not try to stereotype that segment of society in terms of interests, experiences or capabilities. Those persons may be age "cohorts" – those who were born in the same general time frame – but they're individuals.

Population Curve

The population curve, then, is our first challenge. A second social challenge comes in the area of finance. An older person's capability for a satisfying twilight of life is often linked to his financial status. Money, they say, can't buy happiness in old age but it surely can make unhappiness more palatable. Two of the current financial considerations are rising inflation and lack of employment, which combine to put the older person in disfavor in the job market in spite of the Age Discrimination Act. They represent a dichotomy of either full-time employment or no employment at all, without any part-time or flexible retirement alternatives. Other challenges are the technological advances that demand new skills and knowledge that the aged just didn't get in their past education; the prejudicial stereotype of the older worker in spite of research indicating better attendance, equal output and less job hopping; pension laws that don't designate transfer capabilities and don't adequately monitor violations of either vesting or financing procedures; concern for the inordinate amount of the Congressional budget that goes to senior service programs; the attendant antagonism among age groups over Social Security and other programs; and finally, an inability to adequately assess poverty levels and the adverse reaction of those who are within a few dollars above that cut-off for poverty who see others eligible for programs of which they're deprived.

Mandatory retirement at some arbitrary age, with the

notable exception of politicians, is another concern for the elderly. As a 70-year-old, you can serve on the Supreme Court or as a senator, and you can lead the nation as its president. But you can't teach in most universities across the country.

Then, consider the lack of tax incentives to increase savings or return to the work force, or even to volunteer because transportation tax credits for car use are less for volunteers than for salaried employees. The bottom line is this question: Is there relevance to the practice of using age brackets to trigger benefits? Does, in fact, the right of survivorship command an entitlement from society and, if so, at what level of satisfaction?

Most elderly financial seats are three-legged stools. Social Security, pension and personal savings or investments, at best, provide a very precarious perch. Can all of us influence regulations to give credit somehow financially to those who do keep fit and, therefore, are less of a health and economic burden?

Housing for the Elderly

What about housing for the elderly? The era of "we'll take care of Grampa at home" is all but over. Unfortunately, society is too prone to maintain a dichotomous housing stereotype. There is the family home on one end of the horizontal scale, which is equated with dignity, independence and respect; and then an institution on the opposite end of the scale, synonymous with dehumanization, dependence and loss of control in one's life. Perhaps the stereotypes are not as grand or as base as the media would have us believe. Yet many elders cling to the isolation of their homes because they simply can't find any palatable alternative. Can we foster new housing arrangements – communes of elders who pool their resources? Perhaps apartment house rentals with common support services, without the fear that the landlord will wipe the tenant out when he converts to condominiums? Granny flats? The concept that Barry Cooper brought from Australia, which allows a self-contained elder house attachment to the children's home, but affording privacy for both generations? Will we try to serve the pockets of the aged in prevalent inner-city highrise units? Can we find the isolated rural elderly? What problems do density of the older population and geographic areas pose? Does a dollar's worth of housing mean the same as you cross geographic areas?

Then, can we make life more bearable for those who must be institutionalized, even though it's only 5 percent? For example, both the beauty parlor operators and the plumbers who serve nursing homes in this country must be licensed. Regulations demand standards to take care of both ends of your torso if you're in a nursing home. Yet, the person whose job it is to stimulate the residents in mental, physical and social activity currently needs no such license. Thirty-six hours of training are not enough. Are we reaching the various housing units with our fitness opportunities? Are we involved to see that the congregate housing going up all over provides access to physically active experiences, such as safe terrain for walking outdoors or jogging, safe floor covering, or simply unencumbered traffic-flow patterns?

I'd like to turn now from housing to educational concerns. Pre-retirement seminars are not enough, and few of them stress the real value of meaningful leisure pursuits to physical and mental health. We need to educate the younger generations to a greater awareness of the role of fitness in the quality of life for any age, and then they'll move onward with their attitude. We need better professional preparation for those who work with the elderly, whether they're in health, social service or other professions. A 1970 survey of 99 medical school catalogues indicated only 14 that offered any special courses dealing with aging at the clinical level. The situation has improved since then because there have been geriatric education funding resources. But we still have what the Indiana farmers call a "long row to hoe." Most of the doctors I know have never had a course in nutrition, yet research data are linking diet with capabilities for better treatment of disease frequently found in older persons. When will physical educators see the job-market prospects and give their students experience with the elderly, as health, safety and recreation curricula have already been forced to do for school-age people?

We plan and educate for most phases of our lives. What makes us think we can just drift into retirement successfully? Understanding of the aging process and the concerns of aging must be introduced to every level of education to change attitudes, as well as to impart knowledge. No one else is going to place emphasis on the role of meaningful and stimulating activity in successful retirement. It's up to us. Are we forceful enough to interpret that role at every educational level?

Regulations

In-service and continuing education must be made available for those who slide into jobs with the aged. A good heart and "TLC" go just so far in meaningful fitness programs. If you look at legislation and regulation, there are a myriad of considerations. I'd like to do just a few quick picks. Regulations that mandate staff and institutions to determine plans to alter some physical deficiency keep employees so busy with paperwork that they have less time for the human aspect of care. There are too many regulations that specify the wattage of the light bulb in the janitor's closet, but refrain from monitoring the mental, physical or social stimulation opportunities of the residents. There are legal services offered on a doorstep-basis for the elderly, who may not have the mobility to reach that doorstep.

The entire legal fee system, in which most fees are determined by damages related to loss of earnings, must be examined. Because the elderly may not have earnings,

their legal problems are not very lucrative prospects. The bottom line here also becomes the question: Are there some areas in which it's not feasible for the federal government to involve itself? Can "Papa Bear" really oversee everything or must individuals in the private sector be more creative in development and maintenance?

The Senate Special Committee on Aging indicates, "Our concept is that government should first support mediating structures – family, neighborhood, voluntary associations and so forth, wherever possible; second, if necessary, purchase services in the private sector and only as a last resort become service providers." I pose the question: Are we actively getting into the picture as a mediating structure in the fitness and leisure role? How many people have participated in the pre-White House Conference community forums or the state conferences? After this conference, how many will contact White House Conference delegates before they assemble in Washington in November and December to suggest policy? Policy concerns not only fitness and leisure, but also the areas of education, health, finance and housing, which may impact on the person's capability of getting to any of the programs.

In the arena of health, persons 65 or older represent about 12 percent of the population and account for one-third of all the days of care in short-stay hospitals and, more significantly, over 25 percent of the suicides. Will our intervention techniques soften that statistic? Can we emphasize wellness and preventive measures, in addition to maintenance and remedial programs as we deal with physical and mental fitness?

For those in the health-care professions, you're not only in a strategic position, but you have a real obligation to seek out ways to improve the quality of life for older Americans. After all, medicine has played a key role in helping us to reach old age. You should have some commitment to see to it that this stage of life is really rewarding.

Crime in the streets is another critical issue for the elderly, who may be the favorite targets for muggers and purse snatchers. Can our senior karate or judo classes make them more capable of self-protection?

And what of retirement? Retirement with increased leisure; decreased financial base in some cases; loss of accepted roles; uncertainty of expectations, either of yourself or of others; and sometimes a diminishing of independent choices often results more in hardening of the "otories" than in a hardening of the arteries. Today's older American has been conditioned to the work effort. Work not only demanded physical and mental exertion but was usually the milieu for social relationships. Some aged have shaken off the work mantle as a reason for existence, but others haven't. We meet a retiree and usually ask the social question: "What do you do?" He immediately responds, "Oh, I'm retired, but I'm busy." As if not to be busy was somehow un-American.

Psychiatrist Erich Fromm says, "A society which has not learned to honor what it is committed to produce creates an uneasy population. We have more older people. We have for a variety of reasons more leisure, but we're still operating in most cases in a work-oriented, youth-oriented world. Now tomorrow's age may be different in terms of attitudes, education for leisure roles and societal values. But today's aged, I think, are suffering from a cultural lag when our value systems have not caught up with the reality of extended lifespans and expanded, unearned leisure. Until society as a whole has learned to accept that leisure experiences can be as great a contribution to individual and societal welfare as work, then many of the aged will continue to be apologetic and guilt-ridden in their increased free time."

Other Special Concerns

There are other special concerns as we survey the societal kitchen, such as smaller families, which mean fewer middle-aged children to take care of older parents. The relative merit of our zero-population efforts on one hand will accommodate a finite world; on the other, the emerging imbalance of weighing the population curve in the direction of retirees versus the workforce. We have a choice between special programs for the aged to focus attention on their needs versus integrated age programs, which might reduce antagonisms between arbitrarily segmented age groups.

Attention must be paid to antiseptic health environments at the expense of humanistic aspects of care, with much-needed efforts to make business and industry full partners in our efforts. Those are some of the issues and concerns. Should we get involved as change agents at every community level to ensure that older people will have access to a complete social environment that will allow them to live healthier and happier lives in old age? If we deal only with those situations that directly impact on our fitness goals, we'll fail our responsibilities. We're dealing with whole persons. Their nutrition, financial security or insecurity, their mobility, transportation needs, housing and health problems affect our capabilities to interest them in meaningful, health-improving activities. Could we use our collective expertise and theirs to entice them to dance, camp, swim, walk the dog, jog or go to a cafeteria, which will not only improve their flexibility and balance their cardiovascular systems, but will make them feel better about themselves as needed, respected, vital human beings?

The President's Council on Physical Fitness has given us excellent inspiration. They've given us information. They've given us leadership. But they can't do it alone. They need each of us. Each of us must go back to his own community after this conference and find out what's "cooking in the kitchen." For the fourth step, we must sell our congressmen, the White House Conference delegates and our local power structure on the economic benefits of fitness programs. Hit them in their budgetary ledgers. If we concentrate resources on keeping more of the aged physically and mentally active, we will use less of our money on drugs, day care and nursing homes or costly hospital care. And finally, we must join forces with appropriate people and agencies, both private and governmental, to instigate "well" elderly clinics similar to the

"well" baby clinics in your communities. We must develop places that emphasize fitness programs, monitoring health factors, vision, hearing, blood pressure and so forth; furnishing nutrition and leisure education; and offering financial counseling and housing information. Isn't it as important to spend money on doing the things that keep older people well, as to fund their medical needs? We can get elderly volunteers to help run the clinics, using their time and expertise. In an environment with double-digit inflation we can no longer depend on the federal government to fund and manage every good idea we come up with. We must all do our bit in our own corners according to our own capabilities.

General Foods has given this effort a real boost by sponsoring a two-day conference. But we must all work at the grass-roots level to encourage each person, each agency and each organization to implement opportunities for total fitness. We have governors' councils now on fitness, and we need fitness councils at the local level to complete the network. If we can temper the sociological heat in the kitchen, perhaps with everyone's help every future 90-year-old can look back on his life and say, "Long, long ago when life was spring I thought life was a lovely thing. And now with snow on dale and hill, I think so still."

NUTRITIONAL CONSIDERATIONS FOR THE ACTIVE SENIOR

Myron Winick, M.D., director of the Institute of Human Nutrition, Columbia University. Prior to joining Columbia University, where he holds several positions, Dr. Winick was on the faculty of Cornell University Medical College. He is a member of many professional societies and edits a series of books titled "Current Concepts in Nutrition."

While we have focused appropriately on the very important role of fitness, it's my job to explore the other facet of improving health – the fuel for exercise or the raw materials for building a physically fit body. Adequate nutrition must be viewed in relation to the elderly, who need different kinds of nutrients.

When one talks about nutrition as it relates to aging, there are really two prime regards. The first is, are there any nutritional considerations that can increase longevity? Can we, in fact, alter the aging process by the way in which we eat? The second question is, given the fact that all of us are going to age, is there any specific way in which we can feed older individuals so as to improve the quality of their lives? The answer to both questions is yes. In terms of increasing the lifespan, longevity in animals is counted by time. Experiments have shown that by altering nutritional patterns early in life, one can increase the lifespan of rats, for example. One interesting aspect of the experiments is that there are critical periods during which very simple nutritional manipulations will increase lifespan. For example, if you simply restrict, for a brief period of time, the number of calories that you feed animals during the early weaning period shortly after they're born, you can markedly increase their longevity. These studies highlight the fact that for the human population, environment and, particularly, nutrition early in life can program elements as complex as longevity for the rest of our lives.

But from the standpoint of human studies, we know there are certain diseases that are the main cause of a shortened lifespan and that have very important nutritional components. Such diseases can be divided into those associated with over-nutrition and those associated with under-nutrition – too little of some component. Furthermore, they tend to break down by sex. The diseases from over-nutrition are much more severe in terms of their life-shortening capacity in men than in women. By contrast, the diseases from under-nutrition are far more severe in women than in men.

But first, concerning the problems of over-nutrition, too many calories can lead to obesity. Ideal weight is actually higher than the current curves allow. True obesity is a health risk in three major areas. It increases the incidence of coronary artery disease; it increases the incidence of high blood pressure or hypertension; and it increases the incidence of diabetes – all three major killer diseases. These diseases are more prevalent in men than in women and probably account for the majority of the shortening of lifespan or the difference of lifespan between men and women.

Therefore, while women are generally more concerned about their weight, from a longevity standpoint, obesity is much more serious in men than it is in women.

The second problem relating to over-nutrition is fat. In the American diet much more fat is consumed than in many countries throughout the world. And the amount of fat in the diet, particularly saturated fat, is correlated with the amount of lipid in the blood. Higher levels of fat or lipid in the blood are associated with higher levels of saturated fat and cholesterol in diet. Similarly, the levels of lipid in the blood correlate directly with the incidence of heart disease. By reducing the amount of saturated fat, we then reduce the amount of cholesterol in the blood and the incidence of coronary artery disease.

Here, exercise plays a very important role; existing data suggest that through exercise one can increase the level of "good" cholesterol and therefore reduce the incidence of coronary artery disease. Therefore, a low-fat diet and an increase in the amount of exercise are "habits" we should be cultivating.

Fat in the Diet

There is some evidence that total fat in the diet may be associated with two different kinds of cancer – both also contributing to reduced lifespan. One is cancer of the colon and the other is cancer of the breast in women.

The third aspect of over-nutrition in terms of affecting longevity is salt. The American diet is relatively high in salt. There are data concerning both animals and human populations that demonstrate quite clearly how salt content is directly related to hypertension or high blood pressure. In animals, one can breed genetic strains that become hypertensive only if exposed to a high-salt diet. In human populations where salt is not a major component of the diet there is no relationship between blood pressure and aging. Older individuals in such populations do not have higher blood pressures throughout life. However, in our society we accept an increase in blood pressure with aging as normal. The reason: We are a high salt-consuming society. In certain populations within our society hypertension or high blood pressure is enormously prevalent. Fifty percent of adult black males have high blood pressure. The percentage drops somewhat in other populations, but overall, 20 percent of our adult population is hypertensive, suffering from high blood pressure. The salt issue is enormous if we're interested in extending longevity through nutritional means.

In terms of under-nutrition, most of the problems that exist in our society concern women. And there's good reason. First of all, women consume fewer calories and, therefore, consume less food. They then must satisfy their nutrient requirements, which are not fixed on a per-calorie basis but on a per-person basis, from a lesser amount of food. Second, for certain nutrients, women's requirements go up enormously through the cycles in their lives. For example, the requirements for iron and calcium increase markedly when a woman becomes pregnant and lactates, or nurses her baby. Also, women live longer than men. Therefore, their increased requirements – particularly concerning something cumulative over a long period of time –remain longer.

Whatever the reason, there are two particular nutrients that are of concern in the aging process. One is iron. Many women enter the aging process with low reserves of iron, starting at a great disadvantage. Iron is marginal in our diets to begin with, particularly in the diets of women.

Role of Calcium

The second nutrient in question is calcium, which is a little bit more complicated. The calcium metabolism can be viewed as a reservoir. During early childhood and adolescence the reservoir fills; the individual has a positive calcium balance. This reservoir is actually the bones, which then become more highly calcified. In women during the third decade of life and in men, somewhat later, the reservoir begins to empty slowly, continuing throughout life. At menopause, the reservoir in women begins to empty even more rapidly, which can result in osteoporosis or brittle bones. This condition occurs in both sexes but is 10 times more common in post-menopausal women than in men.

How can we alter this sequence of events? The answer isn't simple. Certainly, the amount of calcium in the diet is important, but not just the amount in food – the amount that actually gets into your body. And the amount that gets into your body is also determined by other dietary factors: namely, protein and phosphorus. If you eat a lot of protein and a lot of phosphorus you will absorb less calcium and deposit less in the bone. And the American diet is high in protein from meat and high in phosphorus from certain soft drinks. From a nutritional standpoint, the important change in our dietary patterns to slow down at least the progression of this draining of the reservoirs is a diet that is not only higher in calcium, but lower in phosphorus and protein.

If we increase exercise, change the way we eat, stop smoking and cut down on drinking to increase our lifespans, the older population is still going to have different nutritional requirements than a younger population.

Pediatrics

This may be a surprise to many people. However, one of the first lessons in pediatrics is that there are qualitative changes occurring in the metabolism of children as they approach adulthood, and these qualitative changes have profound nutritional consequences. The same is true with the aging process. There's no reason, then, to be surprised about the particular requirements for older individuals.

What are the differences in these requirements? Very little research has been done in the area of the nutritional requirements of the elderly. In fact, until 1980 there were no special nutrient requirements published for older Americans. We just assumed that the requirements for older Americans were precisely the same as the requirements for 18-year-old college students. This has changed with the 1980 publication of dietary requirements.

One area we have researched extensively is calories.

Older individuals require fewer calories for several reasons. One has to do with metabolism at rest, which requires fewer calories and which will convert excess calories into fat more easily than in younger individuals. The second has to do with the fact that many older individuals do not expend as many calories as younger individuals. And the third reason concerns the fact that older individuals, even if they are underweight, are fat; the percentage of fat tissues versus what we call lean body mass is high. They have a higher percentage of actual fat tissue and, therefore, the tendency to become truly obese is more dangerous. Thus, calories should be controlled in older individuals.

Second, the process of aging itself changes a number of systems. For example, the gastrointestinal tract changes in many ways. The stomach secretes less acid and less of a particular factor, called the intrinsic factor, which is necessary for the absorption of vitamin B-12. And so iron, which must be worked on by the acid to be well absorbed by the body, and vitamin B-12, which in order to be absorbed must complex with the intrinsic factor, are two potential deficiency problems in older people. They then must take more iron and consume more foods containing B-12.

Third, calcium still remains a problem, because older individuals have accelerated bone loss and should follow a diet that is high in calcium and low in phosphorus and protein. Another significant change in aging is the kidney function. The kidney provides an enzyme that converts vitamin D from an inactive form, the way we take it in the diet, to an active form, which actually works in the body. While vitamin D in the diet must be converted by the kidney, there is evidence that the aging kidney is unable to do the job as well as a younger organ. Therefore, less active vitamin D is available, which is the most important mechanism for absorbing calcium and putting it into the bones. With this discovery some years ago, osteoporosis is now being studied in a new way. Several controlled experimental trials have ensued in which the active form of vitamin D, which has recently been synthesized, is being tried in the treatment of osteoporosis to reserve the negative calcium balance and to put the calcium back into the bones. While this treatment is not yet available to the general public, it's being studied in a number of different centers.

Older individuals tend to be constipated because the motility in the gastrointestinal tract is not as good as it was before. By increasing the amount of fiber in the diet through an increased amount of complex carbohydrates, looser stools move more rapidly through the intestines with reduced constipation. Also, other serious diseases of the elderly – diverticulitis, for example, which is an outpouching of the gut because of too much pressure against hard stools – are relieved by a fiber diet.

In summary, there are ways in which good nutrition can increase longevity by reducing the incidence of the major killer diseases. There are also ways in which older individuals can improve their nutrition, such as increasing the amount of iron, increasing the amount of B-12, increasing the amount of calcium and increasing the amount of fiber in their diets. These are all very simple ways that can at least improve the quality of life for the aging.

FUNCTIONAL FITNESS FOR OLDER AMERICANS

Herbert A. deVries, Ph.D., noted physiologist, gerontologist, lecturer and author; director, Exercise/Fitness Laboratory, Andrus Gerontology Center, University of Southern California. The author of five books and numerous articles in scientific and medical journals, he has conducted extensive research on the subject of exercise, including muscular distress in athletes and the physiological effects of exercise on older individuals.

It is indeed heartening and satisfying to see so many people in positions of leadership involved in this conference directed to the physical fitness of the elderly. It has only been 15 years since the prevailing opinions and the physiology of exercise ruled off physical fitness programs for the elderly because it was then believed that our older citizens were, indeed, untrainable. I'm happy to be one of those investigators who have contributed to the body of knowledge that now not only supports the concept of physical conditioning for all ages, but shows that the healthy elderly are really just about as trainable as the young. While there are some differences in the exact nature of the physiological reponses of the elderly to the challenge of exercise conditioning, there's no longer any doubt that the health benefits to be derived by them are entirely similar to the benefits derived by the young and middle-aged. The active life is for all of us, not just the young. On the other hand, we can't be so naive as to believe we've found a fountain of youth that can forever keep us young. All the available scientific evidence tells us now that as we grow older, we suffer losses in functional capacity at the cell, tissue, organ and organismic levels.

The best defined losses in function are seen when the total organism is stressed by physical work or exercise. I will briefly summarize the physical decline that accompanies the aging process with respect to how well the aging can exercise. First, in the cardiovascular system, the most important losses are those related to heart function. On the average, maximum cardiac output – the ability of the heart to pump blood – declines approximately 8 percent per decade after adulthood. Blood pressure typically goes up with age. The coronary arteries gradually close down with fatty deposit, and the circulation in general slows down.

With respect to respiration, the vital capacity decreases, and therefore, breathing requires more muscular effort so that our maximum ventilation goes down with age. The amount of air we can move per unit time goes down. We now have to huff and puff at chores that hardly increased our breathing in youth.

Skeletal muscle decreases gradually in strength – a fact we've known for several hundred years. We also lose some of our capacity for muscular endurance. Indeed, we lose some of the muscle itself – 3 to 5 percent of our total muscle tissue per decade as we grow older.

All of these losses together combine to create a considerable loss in our ability to transport oxygen from the ambient air to the consumer and muscle cells, for instance, and to utilize oxygen at the cell level. This loss in our maximal oxygen consumption capability is what translates into what laymen observe as a loss in pep, vim and vigor. Men have lost about 50 percent of this by age 75, and losses in women are not greatly different. However, it has been shown that very similar functional losses can be brought about in young, well-conditioned men in as little as three weeks by the simple expedient of enforced bed rest. In one of the better studies in this area it was found that in three weeks of bed rest the maximum values to cardiac output decreased by 26 percent; the ventilatory capacity by 30 percent; maximal oxygen consumption by 30 percent; and even the amount of active tissue declined by 1.5 percent. Thus, we might say that changes roughly equal to 30 years of aging have been brought about by simply putting the organism at rest and not allowing any physical exercise.

To summarize, we may hypothesize that the functional losses reported in the scientific literature as age changes really should be considered as resulting from at least three contributing factors: first, an increasingly sedentary lifestyle; second, unrecognized incipient disease processes; and third, true aging changes. The first factor, which we can call disuse phenomenon, is the only one that's easily reversible. We will now examine what physical conditioning can do to slow down the age-wise losses in the functional capacities of the elderly – those I've taken the liberty of defining as persons over 60.

Investigators have found that as a result of exercise training – aerobic or endurance-type exercise continued for a sufficient period of time, usually 15 to 30 minutes – there is a decrease in heart rate per unit workload at submaximal work. There is also agreement with respect to oxygen pulse, which is the amount of oxygen transported per heartbeat. The amounts vary briefly, which may be due to the fact that different investigators have used subjects who started at varying levels of sedentariness.

With respect to blood volume and total hemoglobin, which are factors that we like to see rise, one study has shown a fairly significant rise – 9 and 7 percent, respectively. With respect to measuring cardiac output after exercise training, the only data available concerns cardiac

output at submaximal work; there really isn't any significant change here or in stroke volume.

There are differing results in blood pressure, and it's tempting to suggest that they are caused by significant changes in those who were hypertensive compared with those who were normal tensive, in whom we see very little change.

In relation to the respiratory system, there is a considerable difference of opinion here. My colleagues and I are the only investigators who found significant improvement in vital capacity and breathing function.

Every investigator has found that significant improvements have ranged from a low of 9 percent in six weeks to a high of 76 percent over a shorter period of time. But there's little doubt about improving physical working capacity.

And while improved physical working capacity may not add years to our life, it most certainly adds life to our years. The improvement of physical working capacity is tantamount to increasing the vigor of the older individual, which can make a very important contribution to the later years – particularly in terms of lifestyle and possibly in terms of health.

Another important effect on conditioning is the area of joint mobility, in which several studies have shown improved range of motion. One investigator has also shown that not only can we improve range of motion, but we can also make significant improvements in the amount of torque required to move the joint throughout its whole range of movement.

One of the more significant health effects concerns the tranquilizer effect of exercise, possibly the most important health benefit for the elderly. Some 20 years ago the prevalent notion was that a good physical exercise bout would bring about relief of nervous tension. The importance of testing this hypothesis was clear from several different vantage points.

First, in 1964 the yearly expenditure in the United States for tranquilizers was reported at $327 million. By 1975 in California alone $104 million was spent on medical Valium prescriptions. It is reasonable to believe that based on this, the national U.S. expenditure for tranquilizer drugs may be approaching $1 billion a year. In Canada, it's estimated that the cost of excessive stress was nearly $11 billion in 1979, about $6 billion of which was in lost job productivity and another $5 billion in treatment.

Second, recent medical literature has been replete with clinical and laboratory studies strongly suggesting that none of the currently used tranquilizer drugs can be taken without risk of serious side effects or the possibility of addiction. Third, we have to realize that reaction time and movement time, which are so important to the safety of older citizens as either motorists or pedestrians, are already compromised as a result of the aging process itself. Further slowing of these responses brought about by tranquilizer drugs may seriously increase the hazards for walking or driving.

In summary, a close examination of available data suggest substantial agreement with respect to the tranquilizer effect of exercise. The evidence comes from several different methodological approaches, such as surveys of expert opinion among the medical profession, use of psychological instruments and questionnaires, and controlled psychological experiments. Data have also been obtained from controlled physiological experiments using three different levels: The resting, electromyographic level; the Hockman reflex activation level; and the spinal reflex activation level measured by mechanical stimulation of the Achilles tendon reflex.

While we would like to have a great deal more corroborative evidence than is presently available, we can and probably should in the interest of practice draw a cautious conclusion that appropriate types, intensities and durations of exercise can bring about a very significant tranquilizer effect. We have seen this effect in young, middle-aged and elderly subjects and we've observed a chronic, as well as an immediate, effect.

PHYSICAL ACTIVITY: THE FOUNDATION OF YOUTH IN AGING

Everett L. Smith, Ph.D., clinical assistant professor in the Department of Preventive Medicine at the University of Wisconsin, has been a key consultant and researcher in developing physical fitness programs for the elderly in the states of Wisconsin, Minnesota, Colorado and most recently, Tennessee. For WHA-TV (Wisconsin) he produced 18 programs for older individuals and conducted a pilot program on physical activity, anatomy and physiology of the aging.

Current research confirms that time stands still for no person. The ability to measure physiological change in the human organism has improved greatly. But the relative contributions of environment and genetics have yet to be clearly delineated. Currently, the average individual loses functional capacity at the rate of .75 to 1 percent a year after the age of 30. The beginning of decline in physiological capacity at this age results in the saying, "You're over the hill." Minimal effort is devoted to halting this decline, not because of indifference, but because of lack of knowledge of the methods needed.

Current research has not distinguished what percentage of the decline in the aging process is preventable. In my opinion, about 50 percent of the average aging decline is self-induced by lifestyle, and the other 50 percent is due to the genes or the makeup of the individual biological system.

Society is now asking how the lifestyle segment of the aging curve can be prevented. Preventive measures include education, lifestyle and behavioral modification. With widespread education and behavior modification, disuse atrophy and self-induced chronic diseases may be prevented. Persons in their later years could then enjoy a higher quality of life with fewer physiological limitations. The scientific community has demonstrated the benefits of physical activity. It is up to the individual to modify his lifestyle to prevent disuse atrophy.

Most older people feel that they have no control over the aging process and, therefore, do not seek to prevent many of the functional losses that occur over time. This attitude was demonstrated by 540 individuals over the age of 65 interviewed by McAvoy. The question asked was: "Why are you not involved in recreational activities requiring physical capabilities?" McAvoy concluded that most did not participate because of physical limitations. Sidney and Shepherd asked Canadians over 65 if they thought they had enough physical activity. Most individuals participating in the study felt that they got "more than enough" physical activity and that their activity level was above average. When the same participants were tested on a motor-driven treadmill, they were found to be below average in physical fitness compared with others their same age.

Only in the last few years have we begun to define the physical capabilities of the older population. Previous writers have documented the capability of the older organism to respond to its environment. The older individual will respond at a rate similar to that of a younger individual if physical activity is begun at a level appropriate for his specific age and physical capabilities.

The physical capacity of the human organism in the developed world peaks at age 30 to 35 and then declines. Individuals who maintain a high degree of physical activity have a functional capacity 20 to 30 percent greater than that of the average individual their age. Physical capacity declines at a very rapid rate, however, with cessation of chronic physical activity. Maximal capability then declines by as much as 10 to 20 percent within one or two years.

Intensity of Physical Activity

The intensity of physical activity is expressed in terms of energy expenditure or the amount of oxygen that is utilized. A term coined to express the energy used in physical activity is MET, or metabolic unit. One MET is defined as the use of 3.5 mL of oxygen per kilogram of body weight per minute. The average person requires one MET to rest in a chair. It takes 1.8 METs to stand, 2 METs to walk at 2 mph on a level surface, 3 METs to walk 3 mph on a level surface, and 4 METs to cycle at 6.5 mph.

The older population can be separated into two groups. The "young-old" group consists of individuals from 55 to 75. The "old-old" group consists of individuals over 75. The chronological separation was chosen for its convenience, and physiological or functional capacity overlaps between the two populations. Researchers have found that the old-old in the nursing home and community have maximal work capacities (tested on a motor-driven treadmill) of 2.5 to 3.5 METs. This means that their ability to exercise and move in their environment is severely limited. This is demonstrated by the high blood pressure, accelerated heart rate and muscle fatigue that occur when they walk at 2 on level ground. The young-old in the community have maximal capacities of about 5.5 to 7.5 METs. Physical capacities of the individual must be taken into consideration when programming for these age groups. This means

starting the program at the participants' endurance, strength, range of motion, balance and coordination with sequential programming.

Exercise prescription for the older adult ideally should be based on a complete physical examination, a 12-lead electrocardiogram and an exercise work capacity test. During the work capacity test, a person's blood pressure, heart rate and exercise ECG should be monitored. The exercise prescription would then be based on the results of the exercise test. The program would be designed to exercise at a heartrate between 60 and 75 percent of the person's maximal work capacity observed on the treadmill test. Few programs can afford to test all their participants, so a physical examination is a prerequisite for exercise program participation. A maximal heartrate (MHR) can be estimated as (220 – age). The target heart rate (THR) for exercise is then obtained from the maximal heart rate, resting heart rate (RHR) and percent workload or level desired as follows:

THR = RHR + LEVEL X (MHR - RHR)

Guidelines designed around this target heartrate provide excellent assistance in preventing overload for the older adult.

In pool activities, however, exercise target heartrates must be modified because of variations observed in the maximal heartrate of older adults while engaged in pool exercise. In work done at the University of Wisconsin by Claremont et al, heartrates were lower by 15 to 20 beats per minute in the pool than on land and motor-driven treadmills at the same VO_2 (oxygen expenditure) level. All older adults participating in physical activity programs must be made aware of the decreased anticipated heartrate for physical activity in water versus on land. Otherwise, the potential of overextension or injury to the older adult in water activities exists. Pool exercise provides an excellent means of maintaining or developing fitness in the older adult, especially for those individuals who have orthopedic problems that limit their movement on land. These individuals find it exceptionally enjoyable to be involved in water activities.

Walking Programs

For those individuals who have the ability to maintain a vigorous walking program in the outdoors, a fitness trail can be beneficial. The Waukesha Walker Program was developed to test the benefits of a walking program for older adults. Thirty-one subjects participated in the program: 17 in an exercise group (mean age 70.8), 10 in a control group (mean age 69.5), and four in a test-retest group (mean age 69.5). The experimental group participated in a three-month walking program. The fitness trail was 1 mile long, separated into quarter-mile loops that could be used to progressively increment the distance walked to three miles. Four stations were developed, one in each of the quarter-mile loops. Participants stopped at each station to do three to four exercises. Groups of three or four were chosen to walk together on the basis of their work capacity tests. This provided social reinforcement for the walking program, as well as fitness compatibility.

The exercise group warmed up using chair exercises for five to 10 minutes before going out to the fitness trail. They then walked through the quarter-mile loops stopping at exercise stations. The exercise continued for 60 to 90 minutes depending on the participants' speed. Each group had a series of exercises designed to enhance strength, range of motion, endurance, coordination and balance. To strengthen the upper body, subjects did arm exercises using rubber tubing. The tubing was wrapped through a screw eye put into a telephone pole.

At the end of the three-month study, the work capacity (maximum VO_2/kg. per min.) of the exercise group had improved by 32 percent and that of the control group, by 27 percent. Participants in the exercise program reported feelings of more energy, better health and an increase in activity. The test-retest group demonstrated no difference between their initial test and the final test, performed two weeks later. The purpose of the test-retest group was to evaluate the methods and techniques of the work capacity testing procedure.

The improvement reported for both the control and experimental groups was not due to methodological or equipment error. The study began in early summer, and individuals in the control group increased their activity during this season. Other studies have shown older adults to improve their physical fitness during summer months and decline during less active winter months. This research pointed out that the older adult can improve his physical fitness through increased normal activities as well as through a physical fitness program. Methods to enhance and maintain the physical fitness of the older population during the winter months should be considered. Televised physical activity programs for the older adult and fitness trails within shopping centers may provide the opportunity for activity regardless of weather.

Flexibility

A decline in flexibility is very common in the older population. The Biogerontology Laboratory studied a group of older adults at the Colonial Club in Sun Prairie, Wis. There were 40 subjects: 20 in an exercise group (mean age 71.8) and 20 in a control group (mean age 73). All subjects were free of serious illness and had a doctor's signed approval to participate in the program. The experimental group exercised three times a week for one hour over a 12-week period of the study. The control group participated in no organized exercise. The exercise program was designed to improve flexibility and endurance through their exercises and dance. Compliance to the exercise program was 95 percent with no dropouts. This high attendance reflects the excellent work done by Kathleen Munns, the exercise leader.

All subjects were pre- and post-tested with the Layton flexometer. Six body sites were evaluated – neck, shoulder, wrist, hip/back, knee and ankle. The exercise group had an

average increase in flexibility of 22.6 percent while the control group demonstrated and average decline of 3.75 percent. This research clearly indicates that the older individual has the ability to improve flexibility.

With age, both men and women suffer from bone involution. Bone mineral loss in the aging male begins at about age 50 and continues at the rate of about .4 percent per year. In the aging female, bone involution begins at about age 30 to 35 at a rate of .75 to 1 percent per year. An increased rate of loss of up to 3 percent per year has been reported for five years after the start of menopause. On the average, women lose 30 percent of their bone by the age of 70. This bone mineral loss, commonly called osteoporosis, occurs primarily from the endosteal surface, with the medullary cavity increasing in size and the bone diameter showing no change. In general, bone involution results not only in decreased porosity but cell death in the remaining tissue. These factors are additive and result in bone more susceptible to fracture. Osteoporosis is a significant problem in at least six million persons in the United States. Of these, over 200,000 women fracture their hips each year. An estimated 30 percent of them die within a year of fracture.

The cause of osteoporosis is multifactorial. Genetics, hormones, nutrition and mechanical forces are thought to be principally involved in osteoporosis development in the aged. All factors are important but our primary concern is with the effects of physical activity or inactivity on bone mineral and the importance of physical activity in maintaining bone. The support of the body against gravity and muscle contractions are the two primary mechanical forces applied to bone. If either of these forces is reduced, eliminated or increased, bone mineral content is affected. Inactivity induced by casting, denervation, weightlessness or loss of muscle function has been demonstrated to result in bone loss. In a six-month bed-rest study, three young men lost 30 percent of their calcaneous (heel) bone mineral content as measured by photon absorptiometry. Astronauts participating in the Gemini IV, V and VII flights demonstrated a small but significant bone mineral loss. The loss was attributable to the decrease in gravitational pull and muscle contractions due to weightlessness. The decreased activity of the aging population would seem to play a significant role in the observed decrease in bone mass with age.

Bone is a dynamic tissue that responds to the forces acting upon it from the environment. Bone response is specific to the area stressed; if the femur is stressed, one cannot expect the humeri to become larger. The classic example is thickness of the dominant arm hypertrophied in tennis players. The playing arm was 34.9 percent larger than the non-playing arm in males and 28.4 percent larger in females. Montoye and Smith measured the dominant and non-dominant arms of 61 male tennis players with a mean age of 64. The non-dominant humerus demonstrated a 13 percent hypertrophy compared with the non-dominant arm using the photon absorptiometry technique. There was no significant difference between the non-dominant arms of the tennis players and the control subjects in Wisconsin.

Smith et al reported on a group of 30 elderly women studied for three years. Eighteen subjects acted as controls and 12 participated in an exercise program 40 to 45 minutes, three days per week, for three years. The physical activity program was done from the sitting position in a straight-backed chair for all activities. The exercises ranged from 1.5 to 3.2 METs. The selection of the exercises was based on a treadmill test given to the participants. The average maximal work capacity of the participants was about 2.5 METs. Bone mineral measurements were obtained by the photon absorptiometry technique 10 times during the three-year study. The bone mineral measurements for the control group demonstrated a 3.2 percent loss. Those measurements for the physical activity group demonstrated a 2.29 percent increase. The results of this research indicate that bone will respond to stress placed upon it despite advanced age.

In conclusion, the above research clearly indicates that physical activity plays an important role in preventing loss of human functional capacity with age. Each system of the human body has demonstrated an enhanced functional capacity through physical activity. The combination of increased physical activity and lifestyle modification will enable the older adult to enjoy a high quality of life.

STATE PROGRAMS

James Liston, Executive Director,
Illinois Governor's Council

For the first time, many people aged 50 and 60 are starting to realize that it's their responsibility to get in shape and demand fitness programs for themselves and their families. To address these needs, the National Association of Governor's Councils on Physical Fitness and Sports was established and now comprises 32 states. We're trying to get the remaining 18 on board.

We're all autonomous, all different. Some of us are funded and some aren't. Some of us have big staffs and some of us are dealing with volunteers. We try to complement and support the President's Council on Physical Fitness and Sports.

Many state fitness councils are already working in the schools to develop lifestyle programs. Too often we see school teachers who simply roll out the ball and participate in team sports, rather than in lifestyle activities. We've initiated a school fitness award through the Illinois Association of Health, Physical Education and Recreation to recognize individuals who are doing above and beyond 150 percent, showing school children what lifestyle activities are all about.

The park and recreation agencies, YMCAs, local health agencies and governors' councils should work closely together. It is a vast network that really is untapped in dealing with fitness opportunities.

Many of the states councils are starting to initiate daily fitness programs at nutritional sites, senior homes or senior centers, and to work with coordinators to teach them how to conduct flexibility or range of motion activities. It is one of our biggest goals for the upcoming years. But one of the most exciting programs is the senior olympics, of which there are six versions. Some of them are conducted through the Governor's Council on Fitness; others, through corporate entities such as Blue Cross and Blue Shield; and several sponsors are volunteer organizations that have interested people who want to improve the health and vitality of the senior citizens in their states.

In my state, the theme this year is the "Illinois Senior Olympics Where Every Body Wins." We designed a poster and sent over 500 copies of it to local newspapers around the state. Some of them have really caught on; there are senior citizens around the state reading daily newspapers or weekly rural newspapers, clipping out the ad at the bottom and sending in for entry forms for our events. We are getting a good response from that.

Badminton, tennis, bike races, free-throw competitions, swimming, ropeskipping, race walking and sprinting are some of the activities we sponsor for individuals 55 and older. We have over 40 events for both men and women.

We also have out-of-state competitions with participants from Ohio, Indiana, Pennsylvania, Florida, Minnesota, Michigan and Iowa. One of the things we've learned along the way is that the olympics can't just be athletic – they must be social, and we have as many social events as possible at night for the participants. We're also learning that these people are as competitive as anyone in a school district or in a younger master's program.

Lew Lyon, Executive Director,
Maryland Commission on Physical Fitness

Maryland has adopted a program with the Blue Cross/Blue Shield Company in that state. We put together the Senior Olympics Program last year for the first time and had over 400 senior citizens involved.

First of all, organizing county commissions is important in developing an olympics program. Maryland is fortunate enough to have 23 very active counties that come up with ideas and suggest them to the state commission. In turn, we try to initiate them one way or another.

Last year the Baltimore County Commission came to our state commission and asked us to devise a senior olympics program for Maryland. We involved such organizations as the Teachers Organization Mayford, recreation and park directors, college and university professors, and various people in various organizations who could form a unified group, go to corporations with the proposal and map out our strategies.

What were we trying to accomplish? We felt that you have to crawl before you can walk, and walk before you can run. So we started with a one-day activity in Maryland last year. Fortunately enough, through some of my contacts in working with the commission, I contacted Blue Cross/Blue Shield of Maryland, which was very much interested in the program and had endorsed the project and given the commission $5,000 for the first year. Because the program did so well, the company doubled its initial investment to $12,000 this year and we've made it a two-day olympics.

The Maryland Commission is also involved in a Handicap Fitness Conference. We endorse bike-a-thons, walking events, 10-km runs during the summer and various seminars that try to hit every aspect of the population.

Betty Jane Benkley, Co-Director, Senior Olympics in Pennsylvania

Three years ago, I had an idea of how to get a senior olympics started. I collected all the materials that were available and sent out a survey to 50 states. I received 27 replies. I then held 14 workshops across Pennsylvania to find out what was being done locally. Luzerne-Wyoming Counties, for example, had their Fourth Annual Senior Olympics this year with 800 people. York County put on its First Annual Senior Olympics last year, with about 500 people participating.

At these workshops I conferred with staff at senior centers, hoping to interest them in having their own local senior olympics. Finally, a college was decided on to host a statewide olympics; approximately 300 people participated for a day and a half. What was special was that each participant had a room and three meals for $13.

With the Pennsylvania Senior Center Institute as the sponsoring organization, we came out with a brochure printed by Blue Cross and Blue Shield free of cost that stated the simple objective: "We are here to have fun, to have fellowship, to socialize, to have a safe place for the olympics and to be mentally and physically active." We also wanted the retired persons involved in the olympics, starting with individuals aged 55. There were four age spans for men and four for the women – every five-year age interval.

Two suggestions I would make for starting an olympics in a state or local area are: Whoever is in charge should have a broad knowledge in all the areas concerning physical fitness; and don't collect data – go out and see what is being done in your state.

John Bates, Blue Cross/Blue Shield of Virginia

As an organization involved in major health care in this country, we have a responsibility to promote healthy lifestyles. Having a full-time person to do that facilitates that responsibility.

My job has three specific functions: to promote health awareness and health concepts to our subscriber companies; to work with our own employees in setting up health and fitness programs; and then to use those as models for our subscriber companies and then the public at large. My company does a number of different things in Virginia to promote health and fitness. We go out and give talks throughout the state to various civic and professional organizations about health, stress management and related topics. We talk to virtually any group in the state who will listen to us about the importance of taking care of yourself.

We have embarked on promoting health and fitness through eight different races throughout Virginia and two different race series during the summer. We promoted the Tri-Athalon, which is a combination of swimming, running and biking. We've done a couple of walk-a-thons.

If you want to initiate a senior olympics or some other health-related program, and you need help, check your local Blue Cross and Blue Shield plan. Not all of the plans are willing to do it, but there is a good chance they can provide the financial funding, at least the promotional aspect that is needed. If you're not sure how to promote an event, usually Blue Cross/Blue Shield has public relations experts who will at least donate some time to get you into the right avenues.

In Virginia, the senior event is called the Golden Olympics. It is a statewide event that obviously attracted Blue Cross/Blue Shield because we cover 70 counties in the state, and a large percentage of our paying population and subscribers are older Americans. We have to do a lot to promote the healthy concepts.

The actual manpower and a lot of the brainpower behind the olympics is through the Virginia Recreation and Parks Society, which is a part of the National Recreation and Parks Association. It's the latter's State Council or State Association of Fitness and Recreation Specialists. This year the olympics is also co-sponsored by the Virginia Outdoor Commission. The University of Richmond, the Department of Parks and Recreation for the City of Richmond, and Rocky and Chesterfield counties are also involved. So there are local, government, statewide and corporate components. We all work together in staging the Golden Olympics.

Our olympics runs four continuous days on the University of Richmond campus. What we're trying to do is combine camaraderie, contest and community. By the end of the four days, people who have come to the Golden Olympics have developed new lifetime friends.

For these participants, quite often in their own communities they go out and exercise in isolation. They're considered the oddballs. But when they come to this state organization and compete together, they find that there are a lot of other people who are doing the same activities and they don't see themselves as oddballs any more.

Another major aspect of the Golden Olympics is that quite often a lot of people come in feeling very old at age 55 to 64, but when they show up and find people in their late 80s and early 90s still competing, all of a sudden they

feel like the youngsters. They get a renewed spirit – "Hey, there's another 30 or 40 years of good living left, and here is a 90-year-old lady who is running in the 90-yard dash." So there is still hope.

Our oldest participant was a lady who, at 88, ran the 100-yard dash in 44 seconds. When she came back the next year and ran that same 100-yard dash, it was 33 seconds. So in one year she was 25 percent better than she was the year before. It demonstrates to other people that you can improve with age, that you haven't hit your end points yet, if you want to go out and participate.

Gayle Schnoor,
Central Indiana Council on Aging

This conference and all the senior olympics are inspiring.

What the Senior Olympics in Indianapolis has is the spirit of competition. This spirit motivates over 400 senior citizens who compete each year. Participants throughout the Midwest come to this four-day event, held in June, to compete in athletic events ranging from a 10-km run to checkers.

The Senior Olympics, sponsored by the Central Indiana Council on Aging and the Indianapolis Department of Parks and Recreation, is open to anyone 55 years of age or older, regardless of their state residence. Competitors are divided by age groups of five years per each event with gold, silver and bronze medals awarded to the first-, second-, and third-place finalists in each event and age category.

The events include basketball, bicycle racing, billiards, bowling, card games, checkers, ballroom dancing, fishing, golf, handball, hobby show, horseshoes, paddleboat, pancake race, racquetball, rowing, swimming, tabletennis, tennis, and track and field.

The Senior Olympics is a community-based event that illustrates the activity of people over 55 and the esteem that Indianapolis holds for its older citizens. Rather than all of the events being held at one location, as we've seen some of the events being held at colleges and universities, several of the events are held at some of Indianapolis's show places. The bicycle races are held at the famous Indianapolis 500 Motor Speedway. Senior cyclists tune their vehicles in the pits and get them ready in Gasoline Alley, and then compete on the 2.5-mile oval and sprint 2.5-, 5- and 10-mile races.

The tennis events are held at the Indianapolis Sports Center, the site of the United States Clay Court Championships. Senior tennis buffs are excited at the prospect of playing on championship center courts, where tennis greats such as Chris Everett Lloyd and Jimmy Connors have played.

The Senior Olympics ballroom dancing competition and a gala ball are held at the city's spectacular Hyatt-Regency Hotel. Senior olympians and spectators dress formally for this occasion, which includes dancing to a live band, the ballroom dance competition in six categories and presentation of awards.

These events highlight the festive atmosphere of the four-day event, lending itself to a social as well as competitive affair.

The thrill of participating in events where other athletic greats have competed also gives many senior olympians a sense of pride and inspiration. By utilizing both private and public facilities, senior-olympics competitors participate at the best facilities in our city. Not only do these locations enable participants to compete at a higher level, but contribute to the overall competitive atmosphere of the Senior Olympics.

In addition to the four-day Senior Olympic activities, a major goal of our program and of the Central Indiana Council on Aging is to encourage and endorse year-round athletic and exercise activities for senior citizens.

Since the Senior Olympics began three years ago in Indianapolis, several local athletic clubs and organizations have begun programs for senior citizens in anticipation of the upcoming games. The YMCA has organized a walk and jog club for elders. The Indianapolis Sports Center offers tennis lessons at reduced fees. The Riviera Swim Club has a special swimming class for competitive seniors. The Jewish Community Center began classes and has health club memberships for older people at reduced rates. The Indianapolis Department of Parks and Recreation also has senior swim classes due to the demand brought on by the Senior Olympics in our town.

The Senior Olympics endorses these community programs that encourage older adults to stay in shape all year and prepare for competition under supervision and guidance. The range of events offered encourages a variety of seniors to participate. Each year 92-year-old Walter Hore travels 75 miles to compete in checkers. The pancake race has become a favorite event for women who wish to participate, but who do not feel they are athletic. The race involves the flipping of a pancake in a frying pan while walking a 150-foot obstacle course.

Older athletes from throughout the Midwest also come to Indianapolis for the opportunity to compete against people their own age and to enjoy the camaraderie it provides. Ronald Osbach, 55, from Ohio, found the competition stimulating and ran the 10-km run, which is 6.2 miles, in 38 minutes and 35 seconds. For joggers, that figures out to be about six-minute miles for 6.5 miles.

SPECIAL PROGRAMS

"Take Care of Yourself" Program,
Gregory Paulson, M.D., M.P.H.,
Director, Center on Aging Studies,
George Washington University

Our program focuses on the more handicapped elderly person. Five observations form the aims and determine to a large extent the structure of an interdisciplinary health education and exercise program at George Washington University for elderly persons.

The first observation was that a lack of knowledge among the vulnerable elderly – of physical and psychological changes associated with aging, of effective means to modify or prevent some of these changes and of how to effectively use the existing health care system – contributed to a loss of healthy independent function.

The second observation was that physical exercise and increased body awareness could aid in increasing independence, as well as enhancing their self-esteem.

Third, funding for such programs is very unlikely on an ongoing basis.

Fourth, even when such programs are available they would have to be brought to the elderly where they live or congregate.

Finally, and most important for our program, students could provide a source of real enthusiasm, actual personnel and bodies to carry out the program, if the program were structured in such a way as to enhance their own learning.

Like a lot of good ideas that come out of academic medical centers, the idea for this whole thing came from a medical student, Forrest Martin, assisted by Gail Chandler, a graduate student and professional dancer who had danced with Liz Lerman and the Third Age Company. The faculty of the medical school and the department of human kinetics and leisure studies assisted in the development of the program, and we got a modest amount of money from a start-up grant that allowed us to develop the program. The project has continued as an elective service learning program for first- and second-year medical students, and for graduate students in the department of human kinetics and leisure studies.

A team of one or more medical students and a student from HKLS goes out and visits senior centers, nutrition sites and nursing homes and provides a regularly scheduled program.

My colleague, Nona Boren, will describe the health education part of the program.

Nona Boren
"Take Care of Yourself" Program

The Interdisciplinary Service Learning Project was built on a philosophy that placed a value on providing preventive health care to elderly persons, emphasizing the learning laboratory concept.

Learning laboratories are defined as structured educational experiences in community-based sites where students from different disciplines can work and learn together. The key to this concept is that it is an approach that links the goal of educated students from different disciplines to work with the elderly, with the goal of providing needed service to the clients.

The educational objectives for students of medicine and exercise science are to introduce them to the basic knowledge about aging.

The program was designed to provide an opportunity for medical students and for the students from human kinetics and leisure studies to develop skills as health educators and health advocates, and through experience to come to know the positive outcomes of physical movement, exercise and dance for the clients they served.

The service objectives, as they apply to older persons, are, of course, related. Here the students become the teachers in order to introduce their clients to information relating to self-care and to provide classes that involve them in exercise, creative body movement and relaxation.

The students' field experience is augmented by classroom experience with weekly meetings with faculty from both schools. Those sessions consist of many lectures and discussions on various aspects of aging, and they also provide an opportunity for the students to discuss the experiences they have in the field.

One of the important objectives of those discussions is to provide the students with an opportunity to express some of their conflicts about working with elderly persons, many of whom are handicapped; another is to cope with their own fears and feelings about the aging process.

Jeanne Snodgrass, Ph.D.,
Department of Human Kinetics and Leisure Studies,
"Take Care of Yourself" Program

We have found that movement desires of different people vary. While some people respond well to a rhythmic kind of exercise, others respond better to a different type. We have tried to incorporate, depending on the capabilities of the particular students involved, a broad program ranging from rhythmic prescriptive-type exercises to modified games and activities.

We have also considered the motivation of seniors. The key is to establish a relationship in a setting where both students and older adults feel comfortable about what they are being asked to do, particularly in the case of women who have not been active.

Another aspect of the program is that of the impact on the "self" concept. The impact that successful movement has on children is the same as that on older adults. As they gain and regain increased flexibility, strength, endurance and feel better about themselves, the total impact on the "self" concept is great, as well.

Calisthenics for Seniors

Charlie Scher, Daytona Beach, Florida

You can't argue with success, regardless of what type of exercise or physical work you do with seniors. The fact that they are willing to come, they are enjoying it, the attendance is increasing and they are getting the benefits physically, emotionally, socially and mentally will prove to you that your program is successful.

Daytona Beach Community College asked me to start a 12-week program for senior citizens at a hotel in which they had or still have people in their 80s and 90s and a few in their 70s; I was told that the program would never get off the ground because people there as a rule wanted to watch television and fall asleep, read newspapers and doze, eat, doze.

I was given all the negatives before I even started. I went over to the hotel and motivated these individuals through personal visits, getting to know some of them, getting to talk to some of them, so they would know me, because at that age they were wary of strangers.

The course not only lasted 12 weeks, but 36, simply because I decided on a very simple program of calisthenics with a lot of fun and laughter. I felt if I could get them to laugh and cheer them up, I would win them over. That is exactly what happened.

I started with three elderly ladies and in six weeks I had 71 in the class, and the last two years or so I've been working with approximately 350 to 400 a week. There is no magic to exercising – it's a matter of how you approach people and how you get them to have confidence in you. If they do, you can give them a good workout and they will enjoy it.

I start very slowly and work up. I work up in speed and in the number of times I give them exercises. I have some simple ground rules with the classes I give. For example, they can rest whenever they want, any time they feel tired or a little strained. Then they join in whenever they feel ready. At no time is anyone in the class coerced into doing the exercises. We also have developed an atmosphere of freedom. We have developed a rapport, which goes a long way.

Lorrie Bensik,
Colorado Springs Senior Center

We have just built a brand new fitness facility in one of our senior centers in Colorado Springs. We have nine senior centers in Colorado Springs and one very large multipurpose center. The city of Colorado Springs has a population of approximately 220,000 people, with an estimated population of 30,000 people 60 and older. So, we feel that in our recreation program we need to include fitness to be well-balanced.

Some of the other things we do are arts and crafts, educational programs, information and referral, travel, special events, cards and table games, and drama and theater. Naturally we utilize our local resources because we have the wonderful Rocky Mountains. We have a very extensive outdoor recreation program.

One of the most popular activities for senior citizens is river rafting. We also publicize our activities and special events on a calendar, so when people come into the fitness center, they can look on the calendar and see what's happening.

We also encourage daily stretching exercises as part of our program. Although we ask people to exercise three times a week, we ask them to stretch every day. Therefore, we provide stretching materials for them.

When a senior comes into the center, we have an overall briefing session with him. We ask him to fill out medical history forms. We take his weight and blood pressure and actually teach seniors how to take their own blood pressure.

We have a whirlpool area, a sauna, an abdominal board and a treadmill. We have a number of different classes in aerobics, yoga, massage, relaxation, basic exercise, strength and flexibility, blood pressure, cardiovascular, nutrition, dance and back problems.

Sociological and Psychological Implications of Fitness and Sports for the Elderly

Dr. Art Ulene

We have made some amazing strides against disease, disability and premature death. But I think it is important to note that most of the progress we have made has occurred as the result of a few measures in this century, among them the creation of immunization programs, the development of antibiotics, the improvement of technology and the enactment of sanitary and food regulations. Most of those gains came from community-wide social and environmental programs and through the work of individuals. In the future that approach will not provide the same results.

If we are to overcome the devastation of cardiovascular disease and the degenerative disorders that accompany the sedentary lifestyle so common among our older population, those senior citizens will have to do it for themselves. Senator Domenici has said that older people "never have been given an opportunity to participate in lifetime recreation." I disagree. The opportunities have always been there and older citizens have simply declined to take advantage of them. They did not decline because those opportunities were unavailable or inaccessible; physical activity is as close as the front door. And they did not decline because they cared little about their health or because they were lazy. Everybody here knows that nothing is more important to an older person than health.

Our older people live a sedentary lifestyle because they know nothing better. We have failed to teach them why they should be active and we have failed to teach them how to be active; and our deficiency has not been in the area of administration, finance or facilities because you don't need them to create an effective individual fitness program for senior citizens.

Our failure has been in the area of education and motivation. That is where I believe we must direct our energies in the future.

The 'E' In Elderly: Exercise

Robert N. Butler, M.D., director of the National Institute on Aging. Dr. Butler became the institute's first head in 1976 after a number of years as a teacher, consultant, researcher and practicing physician in Washington, D.C. He is the author of several books, including "Why Survive? Being Old in America," which was the 1976 Pulitzer Prize-winner for general non-fiction.

It has become apparent that with civilization, or at least with certain aspects of civilization, particularly urbanization in the developed world and in certain developing countries, physical inactivity is on the increase. Equally apparent is the fact that we have seen an extraordinary increase in the number of older persons throughout the world, a prolongation of life. And many, perhaps most, older persons throughout the world have begun to accumulate many of the adverse effects of inactivity that hadn't been as possible in more agrarian forms of existence.

The very word exercise is derived from the Latin and means "to drive on" or "to keep busy." In my point of view, that greatly defines life itself: to be active, to be reconditioned, to be involved. That's essential throughout life, including old age. It is in our own best interest and is also likely to reduce social and health problems. But exercise for all of us at all ages, including old age, is to be driving on, to be busy in all spheres, not just in the physical sphere but with all ranges of motion and all activities – emotional, intellectual and social, as well as physical.

One great illustration of a person who has kept busy and driven is Dr. David Bruce Dill, the oldest scientist supported by the National Institute on Aging. He is 90 years old and still winning in a highly competitive arena of the National Institutes of Health, where perhaps no more than 28 percent of the grants that are approved are funded. As one of the premier American exercise physiologists, he works at the University of Nevada Desert Biology Research Center. In one study he is conducting he gives himself and 50 volunteers over 60 bicycle ergometry stress tests. Those who pass—that is, those whose heart rate, ECG, oxygen consumption and carbon dioxide output permit them to—are sent on three one-hour walks around a closed track in the desert while being monitored.

The results of these very careful studies show that older persons actually do much better than younger persons. But we have to point out that these are a very special group of older persons. What this tells us is that given a chance and taking advantage of opportunities to remain physically active, older persons, even in desert conditions, can perform extraordinarily.

David Dill first became involved with desert physiology

and exercise physiology in 1932, when he read of the deaths of 13 men working on Boulder or Kruger Dam. He became fascinated by this problem and made early contributions that led to the fact that there were no further deaths in the construction of that dam from the high expectations of physical effort on the part of workers in that job. He has spent half a century at work on these problems and has given us a great deal of medical benefits, including contributions to CPR, or cardiopulmonary resuscitation.

This elucidates the meaning of science. Not only to discover and measure, but to realize that which is discovered is applied to the benefits of other people. The essence of what I am discussing is the importance of continuing accretion of new knowledge, hard-won knowledge through scientific pursuit, with its ultimate application for the benefit of all of us at all ages.

I have already alluded to the remarkable increase in the number of persons over 60 throughout the world. This is the century of old age. It is also a century of triumph, not of burden, but of triumph and opportunity. This is the first century in which infants safely born can expect to live out what we think of as the usual stages of life, up and into old age. Looking back in terms of historic demography, in 1830 only one-third of newborn infants ever survived into their 60s. Now, over 83 percent of newborn infants can expect to live into their 60s. What a triumph of survivorship. What an opportunity it means for every safely born individual. I have to parenthetically point out that there are distressing and painful circumstances in the less developed countries of our globe, where these facts do not yet apply. But where there are even the beginnings of appropriate health facilities, health care, and the types of immunizations and public sanitation, we've begun to see this remarkable increased survivorship.

"Graying of the Health Budget"

A critical issue relating to the "graying" of America is the "graying" of the health budget. How are we going to be a able to afford so many older people? There's going to be a gain of 26 years in average life expectancy in just about 80 years. A time bomb is due about 2020 to 2030, when the post-World War II baby boom grows gray. Perhaps even as high a percentage as 23 percent of the population will then be over 65. My answer to that is imagination, wisdom, science and scholarship skill. We have to face that challenge and it takes time to respond to remarkable changes. I think this century of old age is a kind of revolution, as well, just as the industrial, technological and scientific revolutions enveloped us with the beginnings of the spinning jenny.

It might be interesting to note that the Japanese are not only enormously productive in technology, but successful with older persons as well. Japanese women are the longest-living group in the world today. And the aging population in Japan is so striking that it will gain in proportion of older persons within 25 years what it took France 126 years to achieve. They didn't have a baby boom after World War II, but a baby bust. There are three factors that bear upon the age structure of a population: declining mortality rates, which have been striking in Japan, the United States and industrialized nations; reduced fertility or birthrate; and the degree to which there is immigration or emigration – that is, movements of the population in or out.

The Japanese are also very positive about age. They have their problems, of course, but it's not that negative stress signal reaction that seems to me to be too common in this great country of ours, this other great industrial giant. Maybe it has something to do with the cultural and religious heritage of Shintoism and Buddhism. I had occasion to read about the life of Buddha and was struck by the fact that his first change – the first of four events in his life that led him to seek enlightenment and to become a great spiritual leader – was his observation of a decrepit older person and the shock and dismay that hit him concerning the pain and distress than can come with age. These observations were woven into a great religion that still influences the ethical and emotional content of Japanese life.

I would like to add that we need new knowledge to be increasingly certain that what we do in our work and commitment to physical fitness and conditioning must demand higher standards of excellence. We must increasingly reduce the chance that physicians, journalists and the public will see physical fitness as "a phase" or a "fad." We must have increasingly sophisticated standards. And we must do much from a variety of points of view to help complete the agenda of the triumph of age.

Need for New Knowledge

How might we complete that? Certainly on this list must be the constant need and support for the acquisition and application of new knowledge. Second, there must be a variety of social and personal efforts and techniques for facilitating human change. Change is always possible. Anyone who thinks health promotion and disease prevention are only for young people is sadly mistaken. And any who think that it's not possible to alter lifestyles throughout life are incorrect. It is possible to do so. Perhaps one of the great motivators in later years is the awesome reality of our own death that helps us keep moving and active and involved. Whatever the bases of the prospects for change, they do exist. Much can be accomplished in terms of health promotion. The National Institutes of Health, which is the biomedical research agency of the Public Health Service and which supports 60 percent of all biomedical research in the United States, spends 17 percent of its budget on prevention and has a special assistant for health promotion to try to even more effectively exploit opportunities in research and to see that the results are effectively applied. Our own institute, the newest of the National Institutes of Health, inevitably has to deal with the possibilities of health maintenance and promotion among older persons. And so we, too, support a considerable amount of research and exercise physiology, changing nutritional requirements of age and other related topics.

Within the context of the 15 goals of the Surgeon General's report, "Healthy People," is the following, which bears upon older persons: "The goal: to reduce the average annual number of days of restricted activity due to acute or chronic conditions by 20 percent." That is, to reduce the time to fewer than 30 days a year for people who are 65 years of age and above. It is a reasonable goal and a goal that our institute means to contribute to as best as we can.

A third item on our list of means by which we can help deepen and broaden the meaning of this triumph of age bears upon developing and reforming certain aspects of medical education and practice (and they certainly need it.) Curricular reforms are in order. Our medical schools don't yet provide adequate coverage of nutrition or geriatrics. We have a great shortage of leadership in the field of geriatrics and a dearth of consultants and teachers, of innovators of changes in health care delivery and of research directors. Obviously that must change, given the dramatic alterations in the demographic structure of our nation. And we must see the development of health promotion clinics for older adults. When I met with the deans of the governance of the Association of American Medical Colleges, I had occasion to point out again that medical students do see older patients. The problem is that the structure or the relationship in which they see older patients is not conducive to a more effective relationship ultimately in the practice by the physician in his work with older people. I want medical students to see older persons get better. To recognize the strength, endurance and power of recuperation, I want a counterpart to the "well" baby clinic. I'm not sure that if medical students only saw children with cerebral palsy they would be motivated in great numbers to go into pediatrics. Therefore, if our medical students only relate to older people with chronic disease who don't seem to be getting better, or who have mental diseases, how many are going to be stimulated to contribute in the important vineyard of new knowledge and care of older persons?

Naturally, when I say medical students, I include nursing students, medical social workers and physical therapists; all of us engaged in health care must deepen our understanding of human aging and the disabilities and diseases associated with it.

Doctors have to go beyond the simple prescriptions they give to older people, such as "Take it easy" or "Once in awhile go out and exercise," or perhaps the most common of all, "What do you expect at your age?" The following story concerns a volunteer in our human aging studies at NIH in the 1950s, Morris Rocklin.

I first saw Morris when he was 94 and I last saw him when he was 101. He died at 102. He told me when he was 101 about a recent visit he'd had with his physician, complaining about pain in his right knee. And his doctor said, "Morris, what do you expect at your age?" At which point Morris jumped out of his chair – feisty character that he was, unintimidated by doctors – pounded on the table and said, "Now, look here. My left knee is also 101 and how come it doesn't hurt?" The point of the story is that regardless of age, every older person deserves a thoughtful, comprehensive diagnostic evaluation and not a casual write-off on the basis of age, or even worse, senility.

We clearly have to move doctors into a more sophisticated relation to the prospects of physical fitness. We need individualized scientific prescriptions, such as how to respond to the older or younger person who's had a myocardial infarct, which is a coronary attack.

The Greeks had an understanding of this. Anesclipia, a place many people attended, had three components: a hospital, a temple of worship and a gymnasium for exercise. Also in terms of developing and reforming aspects of medicine is the creation of what I call the teaching nursing home. There are 7,500 hospitals in the United States and about 425 of them are teaching hospitals; that is, they have a direct relationship to the 126 medical schools and become the environment for effective academic teaching. We have never created an adequate environment for studies of patients with chronic disease or those who require nursing home admission. We are denying young people in speech pathology, nursing and medicine an opportunity for proper training in long-term care; denying them because two years from now, when they are at the height of their professional career, much of their work is going to involve old age. The costs in relationship to nursing homes are staggering. The National Institute on Aging was started in 1976. Nursing home costs even then were $9.9 billion per year. Last year, just five years later, the costs were nearly $22 billion; it's expected that by the year 1990, nursing home costs will approximate about half of what the present defense budget is, about $75 billion. And that's a conservative estimate based on the known increments and the number of older persons, people defined over 65 years of age, and based on the known incidence and prevalence of a variety of disease states.

Senility

Another reason we need a teaching nursing home is that through a variety of maneuvers we no longer see older persons with certain major and costly conditions, either in general hospitals or in academic hospitals. A case in point is the most prevalent form of senility: **senile dementia** of the Alzheimer's type. It is probably the fourth or fifth cause of death in the United States, and probably accounts for half of the one million people over 65 in nursing homes. It isn't that those in nursing homes don't have other diseases, but the one that makes it impossible for them to take care of themselves is the one profoundly impacting on their central nervous system, their brain function, which is, of course, their main means of adaption. There are now more patients in nursing homes on any given day than there are in general hospitals. But there is some good news on that particular front. There are a number of very exciting new leads as to the basis for **senile dementia** of this particular type. One finding, the reduction of a particular enzyme in the memory portion of the brain necessary for the synthesis of a particular neuro-transmitter or messenger system, is leading us all to exciting team efforts at trying to find a means by which we can make up, through

a variety of interventions, for this deficiency. One model that might help you appreciate this is the treatment of Parkinson's disease by L-dopa; this particular type of model may be applicable to this condition, but there are actually a number of different points of potential intervention, of which the L-dopa model is but one.

Another topic that is of great importance in completing our understanding and enrichment of the triumph of life is to consider the problem of the differential life expectancy between the sexes. Women outlive men. This has been true since the 1920s with the massive reduction in maternal mortality. Women now outlive men by 7.7 years, and contrary to the belief that as women enter the workforce they'll begin to have mortality rates similiar to men's, it's going just the other way. The more women become involved and away from the household, the better they're doing. And it's expected by 2020 women will outlive men by about 9.9 years. but there are some serious tradeoffs. Women don't totally enjoy the loss of their relationships with men, and they also have a variety of disease states that differentially affect them compared to men. We're studying this. We want to know why women and men have this difference in life expectancy.

Delaying the Aging Process

We're also engaged in efforts to delay the aging process, the deteriorations that occur in the immune system and the reduction of bone mass that leads to osteoporosis. This thinning of bone, which is so common after the menopause in women, is related to the high incidence of fractures, particularly of the hip, the wrist and the back, often leading to a major restriction of the mobility and freedom of the woman at a time in her life when, free from children, she might be able to enjoy a great deal, but instead is afflicted by this condition.

Seventh on the list, we must contribute to enhancing human vitality and productivity. If we're going to talk about moving the retirement age eligibility under Social Security from 65 to 68, for example, we could be sentencing these people to poverty if we can't be certain that the health and capacity of people can continue their role in the workplace. And, of course, we have to be sure of job availability. True, we've had an increase in average life expectancy. But we must have a new concept – average health expectancy or average vitality expectancy. They don't necessarily go hand-in-hand.

Eighth, we need to develop an increasing number of support systems within the American community to enhance and enrich the family's capacity, and where there is no family, to find alternative systems. Twenty-five percent of people over 65 have no family. Fifty percent of people in nursing homes have no family. And again, it's largely an issue of women because 75 percent of people in nursing homes are women who had no children or whose husbands have died. About 30 percent of women in the 65-plus age group do not have any children. But when it comes to discussions of support systems, it's important to realize that men suffer more upon the death of a spouse.

Ninth, in the public arena, we must see that our general public schools no longer call physical education a minor subject. It must become a major subject. We must remove ourselves from the terrible professionalization of sports within public schools, high schools and colleges, and from the commercialization of sports in America, which leads people to be spectators rather than participants.

Also important on the agenda is to further support research, particularly in efforts to eliminate senile dementia, the disease of the century; to support the development of geriatrics; to enhance the effectiveness of the variety of services provided for older people; and to improve long-term care.

I've already indicated that the demographic revolution is worldwide. It's not just a function of the United States or Japan or advanced industrialized nations. There will be a doubling of persons over 60 throughout the world in just 20 years. Sixty percent of people over 60 will be living in the Third World, and if you see the distress signals coming up from the productive giants of the developed world, you can imagine the special problems that will be imposed upon nations that have enough problems with survival, nutrition or health care. With the graying of the world comes a new kind of laboratory, of potential opportunities for us to understand the interrelationships among the generations, of children and parents and grandparents. We really didn't have three-tier families in the past, despite much romanticism on that score. We had high-fertility families with many brothers and sisters, but really not many grandparents. Even now in Sri Lanka, for example, and in most of the developing world, less than 3 percent of the population is over 65 – not the way it was in the 1850s in the United States. So we have a new laboratory in front of us, a laboratory of remarkable change in the age structure of society. It's a challenge to us. It's going to require wisdom, driving on and keeping busy (the Latin roots of exercise), imagination, working together and uniting the private and public sectors in unique ways.

RECREATION PROGRAMS FOR ACTIVE SENIORS

John H. Davis, executive director, National Recreation and Parks Association. A 25-year veteran in parks and recreation service, Davis has directed agencies at the municipal, state and regional levels. During his six years as director of parks and recreation in Dalton, Ga., he developed a number of programs that resulted in his department being named one of the most outstanding in the state.

I would like to suggest a medium for not only transmitting information about the urgency of fitness in the lives of people and in the life of a community in general as it relates to family solidarity, but for promoting and implementing programs. I strongly believe in the viability of local park and recreation systems – YMCAs, boys clubs, schools and churches – generating physical fitness programs.

Constance R. McAdam, chief of the Recreation Division, Arlington County Department of Community Affairs since 1969. Ms. McAdam established a nationally recognized recreation program for senior adults and the first nutrition site in Northern Virginia. The featured speaker at innumerable national, state and local conferences and workshops, Ms. McAdam has been a significant figure in bringing the needs of the aging to regional and national attention. She has received the Distinguished Service Award for her effort on behalf of senior citizens.

The recreation division of Arlington County takes a multifaceted approach to recreation programs by taking into consideration the different lifestyles and life stages of the population we serve. Our special four-dimension approach to program implementation enables us to recognize the diversity of interests, lifestyles and age groups of the citizenry.

The first step in implementation is to determine the target groups in our community.

The second approach is to provide recreation spaces, areas and facilities so that there can be self-directed activity. The third approach involves dissemination of information and knowledge about activities and services offered in the county. This approach includes the concept of leisure counseling, marketing strategies and technical assistance to groups and individuals.

The fourth and final program approach emphasizes education with development classes, lectures and other instructional activities.

The senior adult programs reach Arlingtonians over the age of 55, and services are provided through nine senior adult centers and 20 senior adult clubs throughout the county. The recreation programs give an opportunity for seniors to come together in social gatherings. The range of activities within that physical fitness category includes dancing, exercising, organized sports, walking, bowling, swimming and special athletic events.

Another program that has increased in popularity over the years is our summer camp, with 80 seniors and 10 staff members who go to a local mountain retreat for four days and three nights.

Clark T. Thorstenson, professor of recreation management and youth leadership, Brigham Young University. Currently physical activities specialist for the Church of Jesus Christ of Latter-day Saints, Thorstenson was instrumental in creating a highly successful senior fitness program sponsored by the church and the Utah Governors Committee on Health and Fitness. He serves on several committees, holds membership in professional organizations and has co-written two college textbooks on social and outdoor recreation.

Approximately 72 percent of Utah's population adheres to the Mormon faith, which has a relatively strict health code for its orthodox members.

Our philosophy says that the human body is sacred. Each of our church buildings not only has a chapel for religious worship, but also a recreation or cultural hall, wherein physical and cultural recreational opportunities are promoted and conducted.

In 1980, we developed a physical awards program based on self-motivation and individual monitoring, as well as having a reward factor that ultimately promoted a higher level of fitness among our people. The result was an attractive brochure that we were able to distribute for 10 cents each.

A program that has received national attention is the Utah Seniors Physical Fitness Awards Program, a simplified participation program that explains the purpose of the award and how to achieve it.

The Sunshine Hop is also a unique fitness or exercise program, consisting of 14 exercises that can be accomplished in approximately 20 minutes by either sitting on a chair or standing next to it for support.

Another exciting program that has thousands of enthusiasts is the Jog Jazz Exercise Program, an enjoyable recreational aerobic exercise program designed to help individuals reach the highest level of fitness, gain more poise and self-esteem and, finally, to help them place themselves in control of their mental, physical and emotional lives.

Another program that complements physical fitness is the Pursuit of Excellence for mature persons to help them achieve harmony and balance in their lives. It's an individualized program that requires self-motivaton and is designed to foster a better lifestyle by providing noble and worthwhile goals to improve mental, as well as physical, ability.

The final program is the "Activities Exchange," a quarterly bulletin consisting of a compilation of successful activities that have been tried in other locales and submitted to us in Salt Lake City. It includes recreational activities such as reader's theater, dance, talent and interest surveys, drama, family activities, music, physical fitness, sports, art, crafts and hobbies. As we receive the activities from throughout the country we make a compilation of those we feel best meet the needs of most people. We print them in a four-page booklet and distribute them upon request to anyone who wants a copy.

Dr. Brian Latham,
Medical Director,
Pratt & Whitney Aircraft Products Divisions,
West Palm Beach, Florida

When I trained in medicine I thought probably the most romantic thing to become was a surgeon, because surgeons were always the most revered of all doctors. So I spent six years training for surgery and became a thoracic and vascular surgeon. And I felt that was the most important undertaking in my whole life.

I had been trained in my surgery that if you couldn't remove it, it couldn't be cured. The average age of the patients I operated on was over 65. They had assumed that they were all going to die of diseases they couldn't control.

Then evidence started coming out that diseases could be controlled without surgery and without medication. That was hard for me to believe. It meant if I couldn't operate on it, then I was going to be out of a job. And I think unfortunately that many surgeons still feel that way and give very little reverence to the idea that vascular disease, lung cancer and hypertension can be controlled or cured by nonmedical means.

One day I found a patient who actually took my advice. She was about 60 years old and had an obstruction in one of the main arteries to her right leg. She couldn't walk more than half a block without pain. That was significant because that meant her artery was blocked with arteriosclerosis.

On my advice she quit smoking, began to exercise and changed her diet. Within six months she was walking a full mile without stopping. The evidence of an obstruction in her artery had gone away.

With this one success, I felt that there was a bigger message out there than just operating on people: to intervene in a disease process that is continuous and prolonged and leads to death even if surgery is done. That's what probably led me to get involved with occupational

medicine.

I began working for a local company, and fortunately, they supported my view. They let me develop a physical fitness program designed around lifestyle modifications. There are hundreds of retired people coming back to work because of the financial problems of today; we're going to see an older and older workforce. There's no reason that these people can't be as healthy as younger people. What our program has tried to do is develop a comprehensive approach to lifestyle modifications – not only in exercise and fitness, because that's only part of the whole picture.

The big picture is stress in companies or anywhere where people work. Stress is a loose term which to me means aggravation – aggravation going to work, aggravation with people yelling at you or taking orders from bosses you don't like. People, in my opinion, actually develop heart disease, hypertension and emotional problems from stress. I didn't believe it until I went to a workplace where I saw people day in and day out, and now I definitely believe it's one of the problems that precipitate heart disease.

Our approach is total, comprehensive. We place people in a screened program. We look at their lifestyles, we look at their blood chemistries, we place them on an exercise program and follow them. Many people have actually lost weight, changed their blood chemistry outlook, lowered their cholesterols, have begun exercising and, interestingly enough, many people who have changed their lifestyles do not require medication and are not as debilitated as they once were. So I know we're doing the right thing. We're not operating on people, but we're saving them. They're living longer. They're living more and more fruitful lives. In my opinion this is the road to take in that area.

One of the main problems in this endeavor, however, is the psychological aspect. The key to psychological problems and stress is exercise. That may be too simple for most people because psychiatrists may be losing out on a lot of money. The key to reducing disease and to reducing psychological problems is through exercise – it is the best mood elevator and stress reducer of all. And the physical benefits are a remarkable spinoff. You will reduce your disease possibilty, the chance of having heart disease, high blood pressure and many other things. But the main reason people should exercise today is for their mind. And I think if we ever learn how to motivate people to exercise, it will do more to reduce disease in the United States than anything else. It's our only chance. All the billions of dollars we've spent developing technology and training doctors and surgeons will have only scratched the surface. We will never reduce disease on a large scale until people begin to realize that it's a simple formula. It's exercise.

At our plant we have a pre-retirement program, and I was asked to look at the medical aspects of it two years ago. The previous doctor had written a medical approach to retirement: curtail physical activities, visit a doctor twice a year for a complete physical exam, reduce sexual activity and mainly just take it easy. That is still a prevailing, although changing, opinion of prior practitioners. There's an underlying financial reason for this: If you start exercising and get rid of your pills and your disease, you're not going to need a doctor anymore. And doctors need a lot of money to support their habits. There's no question in my mind that just in our plant we spend millions of dollars a year for what we call health care. It's not really health care; it's disease care and about 50 percent of that care is imagined disease care.

My approach has been double-barreled. We're trying to get people to realize they don't need to go to the doctor every time they have a good sneeze or they stub their toe and, indeed, when they do have significant diseases and need to go to a doctor, I try to find doctors who are more reasonable with their fees and who will not operate on people unnecessarily.

These approaches have worked for us. Our medical costs per employee have been reduced in the last two years, while for the general population are rising 12 to 15 percent a year. We have documented savings of hundreds of thousands of dollars for our companies. You don't need to be the doctor to cure diseases – some diseases that are common in our society can be cured by non-doctors and should be. The answer is exercise, diet modification and no smoking.

PHYSICAL FITNESS PROGRAMS FOR THE AGING EMPLOYEE

Richard D. Finucane, M.D., has been instrumental in shaping physical fitness programs for employees at General Foods Corporation since 1974. As director of health services, he has also developed a national program whereby medical problems interfering with work productivity are recognized early and managed. He continues as director of medicine at Phelps Memorial Hospital in North Tarrytown, a member of the American College of Physicians, American Occupational Medical Association and has served as chairman of the AOMA Committee on Medical Information Systems.

I'd like to discuss how we can actualize some of the physical fitness objectives in the business environment. From businesses' point of view, the key is improving our productivity. We've heard it said that we have lost the competitive edge we previously held in world trade. We're taking appropriate steps to modernize our production facilities; we're trying to conserve our energy; and we're trying to conserve raw materials. We've also learned somewhat belatedly that there is another way to improve productivity, and that's to manage our human resources better. And here we've heard of management by objectives, the management process; many of those in business, probably even in government, will be familiar with the term "objective setting" and compensation based upon this. If you are familiar with blue collar activities, there are quality circles and there is participative management; all of this is designed to help people feel part of and more committed to their businesses.

Because the program I am discussing is going to be funded by business, we have to obviously look at it from that point of view. The point is that corporations have found they have to get more actively involved in promoting improved physical fitness and in helping employees cope with developing emotional problems. While these are really individual responsibilities and they must stay that way, it's apparent that preventive efforts have not received adequate priority. And the human and economic costs have become serious for government, business and the individual alike.

Let's switch to the employee's side of the equation. He or she is also looking for productivity. It's being sought by our older citizens, some 55 million of whom are over 55, whether they're working or they've actually retired. Whatever their current state, they want to be productive, useful, relevant and able to continue to contribute. And their ability to continue is largely dependent on how well they have maintained their own mental and physical health. Unfortunately, safeguarding these assets is no easier than many other things we do in life. It is certainly no easier than building a business career, preserving a marriage or raising children. And it's an effort that has to go on simultaneously with all these other efforts, otherwise life will not have its full meaning when we reach the age of 55 or 60 and begin to look back. The more a person is able to balance personal and business goals during his 20s, 30s and 40s the more likely he is at 55 to have the physical and mental resources that he's going to need for his golden years. The earlier he can give the priority to the development of health habits and correct lifestyles, the better the chance he will have to do what he wants to do when he is retired.

It's also a lot easier to learn how to lose weight, how to stop smoking and how to take care of your back in your 20s than it is at 55 when you have a coronary and you're in the middle of a crash program, with 30 years of bad habits to unlearn. There's a very fine book written by George Valiant, who is professor of psychiatry at Harvard, called "Adaptation to Life." Valiant discusses the attributes he feels are the best markers for mental health as one looks back. He talks about the ability to maintain close relationships, the ability to take responsibility for others in parenting or mentoring, the ability to invest in life and to look to the future and the ability to play and take vacations. His evidence was rather staggering.

Mid-life Crises

We've all heard of burnout, of these paralyzing mid-life crises where a number of people have become dependent on alcohol and drugs. These are consequences of a loss of a vital balance, when individuals were caught with a physical illness or in a plateau situation in business and developed either a physical or a mental problem.

We've found a lot of success in employee guidance programs and certainly they have proved viable to the individual and valuable to the corporation. But that's late – that's after people have been through problems. The challenge is to find an approach before there are human and economic costs. I'd like to discuss what General Foods has done to mesh these interests.

In the early 1970s employees at our White Plains headquarters were encouraged to participate in a morning and noon session at the local YMCA. Some of the programs were personalized because we had numbers sufficient to exert leverage. Exercise breaks, dance breaks and relaxation techniques were taught to employees and middle managers who came in from the United States and from around the world. They became attuned to the fact that some of their problems were caused by working too long and perhaps relying too much on the cocktail break.

Our fitness center in corporate headquarters in White Plains opened in April 1975. It's approximately 10,000

square feet, consisting of a tartan surface running track, 16 laps to the mile, the inside of which is a base for basketball, volleyball, supervised calisthenics and aerobic dance. Downstairs there is a large training room, lockers, changing rooms, showers and offices for three health fitness professionals who direct the program and counsel our employees. Running paths from a mile and a half to seven miles in length have been plotted out using residential streets and parks, providing variety and challenge for our joggers. We also got orange labels so that joggers are visible at night.

We determined that the facility would be open to all full-time employees in Westchester (3,800 people) and that exercises would take place on the employee's own time. We're open from 7 to 9 a.m., 11:30 a.m. to 1:30 p.m. and 4:30 to 7 p.m. The managers do testing, counseling and planning in the intervening hours.

Use of the fitness center is medically supervised. Each employee entering the program is profiled, which means that we try to find out what his current situation is – his height, weight, body fat, blood pressure, pulse – what his current physical characteristics are. We also consider how many sit-ups can he do and how much flexibility he has. We also look at his chemistries and risk factors. Most important, we ask him what his objective is, what he wants out of this program.

For anyone over 40 we decided that we needed the safety of having maximum stress tests. One of the concerns of industry is that there are some risks involved, and we try to minimize them. And thus far, having completed 1,400 to 1,500 maximum stress tests in this environment, we have not had any problems. We do emphasize safety for people over 40 and feel that it's paid off.

Our initial group began April 1975 totaling 434 people. A University of Toronto group examined our experience after two years, specificially looking at the attitudes of our people's perceptions and needs. Of the total, only 224 people were still enrolled at the end of two years, and we were not very happy with that.

We asked a lot of questions and tried to get many of the dropouts involved, as well as people who had left the company or who had retired, and we learned some interesting things. People wanted more variety, more fun, more peer relationships and more feedback. They wanted to know how they were doing specifically. And they wanted to see what kinds of changes had taken place in themselves. At the same time, we were trying to make it more relevant to older people and we began to more closely interrelate with the health service department. We have a preventive physical exam each year for employees. And we began to use some of the results of that in asking people to voluntarily go over to the fitness program. Those with back problems or weight problems we pressed a little harder to see if they could participate. We have also increased variety by building in yoga and aerobic dance programs. We have increased usage of the circuit training program as a way of helping back problems. We've also tried to measure calories spent and calories taken in for our weight-control programs.

We try now to get more older people involved and to make it a little more specific to the individual. Once a participant agrees to a specific objective, the instructor puts together a program based on certain exercises, their sequence, frequency and duration on a three-times-a-week basis. The individual then fills in cards on what he has actually done – inside and on the outside.

These cards run through a computer and formulate what we call energy statements. They indicate an equivalent amount of calories that have been burned by the individual on the programs. These statements give us feedback as to what programs are being utilized and enable us to give people back what they are looking for. We do not foster head-to-head competition among people – I think one should compete against one's own goals, not against other people.

As a result of this, over the last two years we have improved our participation, and our figures in July showed 814 people, of which 14 percent were more than 50 years of age. That doesn't qualify us as running a program for the aging, but I think we are moving in that direction and feel very good about our ability to handle it.

We operate on the same basis for people over 50. We retest them a little more frequently. We make sure that they have their own goals and they succeed at their designated pace. We want to get more people because we do believe that second-quarter participation helps endurance and helps meet the goals of retirement.

Andrew T. Letendre, vice president of public information and advertising, The Travelers Insurance Companies. Letendre is a familiar figure in the field of insurance communications. He has served as president of several professional societies, including Life Advertising Association and Insurers Public Relations Council.

Because of our focus on older Americans we've added a new component to our original Pep Cross Country Ski Program, The Travelers Senior Pep League. Last winter we introduced a cross-country ski program organized specifically for persons 50 and over. It starts with pre-season workshops and on-snow clinics conducted by doctors, skiers and coaches. The emphasis here is, of course, on fitness, safety and social activity outdoors. And many of our over-50 employees participate in the program.

The introductory free pack to cross-country safety skiing as geared to the 50-plus groups has been very well-received. The success of our first year's program with senior ski leagues has encouraged us to offer additional clinics for the coming season at selected sites in the East and Midwest. Anyone interested in that program would also get a complete listing of the locations by writing to The Travelers Senior Pep League, 1 Tower Square, Hartford, Connecticut.

Good health is a primary concern of all Americans. For older Americans, good health is a necessity. It is our belief that The Travelers is promoting general awareness through regular fitness activities, helping to create an atmosphere conducive to maintaining good health habits throughout life. Fitness awareness is not something that suddenly develops – we are dedicated to fostering a lifetime responsibility starting even before school. By appealing to various age groups, we are counting on peer pressure within each to build and maintain commitments. For that reason, this year we introduced a lifespan fitness program called "Some Pep in Your Life," featuring three components. Each was geared to a particular age group. "Pep Up Your Life" is an exercise program for preschool youngsters, for which we have just completed a film starring Dr. Richard Keelor.

We also have an exercise program called "Step Up Your Life" for adults and, of course, the "Step Up Your Life" fitness program for senior citizens. We offer booklets free of charge to all Travelers employees.

To us at The Travelers, the good health of all employees is equally important, with none deserving greater attention than the other. In view of industry's growing dependency on older Americans, however, we are stressing the fitness of this group now on a priority basis. As time passes, we hope that younger Americans will be led by example and education to follow good business practices throughout their lives. By the time they reach retirement age, their general physical condition will not require any special exercises to restore endurance, flexibility and strength. When that day arrives, the benefits of regular exercise, which has for so long been a goal of the President's Council and The Travelers, will be so evident that we will no longer have to promote it.

THE TIME IS NOW

by

C. Carson Conrad
Executive Director, The President's Council on Physical Fitness and Sports

President Reagan wishes to thank the many people who assisted in this conference. In particular, appreciation is given to General Foods, Post Cereals/Sanka, James Ferguson and members of his fine supporting staff.

This is the second follow-up to the First National Conference on Physical Fitness and Sports that was called by the president in February 1980. The first was the White House Conference on Physical Fitness and Sports Medicine held in October 1980.

During the past three days, 28 distinguished Americans, who have assisted the PCPFS significantly in carrying out its national goals, have been honored, and you have heard a great deal about the vital role of appropriate physical activity for older Americans.

Well, how did the President's Council on Physical Fitness and Sports, which was created as a council on youth fitness, become concerned about fitness for older citizens?

In the early '70s, the PCPFS conducted a national adult physical fitness survey. According to the survey, only 39 percent of Americans age 60 and over got any systematic exercise. The favorite form for this age group was walking, practiced by 46 percent of men and 33 percent of women. Few of these older people engaged in

more strenuous forms of activity. Only 1 percent were joggers; 6 percent did calisthenics; 3 percent rode bicycles; and 4 percent swam.

If I were asked to characterize the attitudes of most Americans in my age bracket toward exercise and fitness, the list would look like this:

1) They believe their need for exercise diminishes and eventually disappears as they grow older.
2) They vastly exaggerate the risk involved in vigorous exercise after middle age (and I am sure now as we all look back on what's happened, we all did this).
3) They overrate the benefits of light, sporadic exercise.
4) They underrate their own abilities and capacities.

That is a fairly harsh indictment of the current state of fitness and fitness knowledge among older people. It was true in the middle '70s and it is true now, but we've made real progress. Nevertheless, it is accurate and fair and it enables us to fairly judge the nature of the challenge that we face. Item 4 might better be said by, "Don't sell yourself short."

How have we worked to change the attitudes of these Americans?

To illustrate the Council's attempt to change people's opinion, I would like to refer to our float in the January 1977 Inaugural Parade. The float had a sophisticated treadmill placed on top of a jeep. We were able to secure Paul Fairbanks, 70 years old from Ocean City, Maryland, to run on the treadmill that was set at 6½ miles per hour for approximately 2½ hours during the parade. Paul ran approximately a half-hour before the parade started in order to warm up properly. And then with television cameras from all the major networks on him, he ran comfortably, without distress, literally before all of America.

This was one of the ways the Council told the American public, "Don't sell yourself short." It is interesting that Paul Fairbanks began a running program at age 62, after walking a couple of miles each day for several years. As running became comfortable for him, he ran two miles a day until suddenly he could run faster and longer. Now at 74, Paul is still a regular runner and an effective competitor.

A media program to raise the performance potential of older people was a series of print ads done with the headquarters office of Blue Cross/Blue Shield in Chicago. Duane Carlson, vice president of communications, and his staff worked with PCPFS in developing a series that covered the company fitness programs at Xerox and Kimberly-Clark Corporations and emphasized the importance of jumping rope for exercise, walking and running.

One ad that ran in practically all of the business, industry and popular magazines was headed "Five Miles a Day Keeps the Doctor Away."

In that ad, Mavis Lindgren, a 71-year old mother, was featured. Mavis had been subject to colds all of her life: at two, she had whooping cough; at 13, tuberculosis; and until middle-age, was afflicted by chest colds that turned into pneumonia three times. At 62, with her doctor's blessing, Mavis started running because she thought it would help her. Since then, she's never had another cold, has been sick only once in nine years when she had the flu that lasted an afternoon. When she started running, her resting pulse was between 72-76; today, between 52 and 56. This summer she ran the Pike's Peak Marathon in one hour, 27 minutes, faster than her time last year. Next week, she is entering the OTC in Eugene, Oregon, which will be the 25th marathon in which she has competed since reaching age 70. Mavis Lindgren is the world's record holder for the world's marathon age-group, 70-74 years. Time: four hours, 33 minutes. The Mavis Lindgren story sounds like exercise is a panacea, and for many people whom I have met in the past two decades it has been just that.

It may sound facetious but the greatest problem the Council has had to face concerns the credibility of exercise – getting people to realize that it is so available, valuable and rewarding and is so inexpensive and simple with the potential for immediate, positive results.

A number of the Council's public service advertising spots have been aimed at changing the attitudes of older people toward exercise. Probably the most effective and popular was "The Young at Heart," in which Frank Sinatra sang the song of the same name.

One of the more significant national projects underway, which has great potential for improving the fitness of seniors, is the national goals project. Glenn Swengros serves as PCPFS liaison with The Public Health Service which has launched a major effort in preventive medicine. Highlights of the national fitness and exercise goals announced in the PCPFS Newsletter in June 1981 include:

- Older people participate in appropriate physical activities at disproportionately low rates compared with other age groups.
- Various service, technologic, legislative, regulatory and economic measures should be undertaken to promote physical activities for older Americans.
- By 1990, 50 percent of adults 65 and older should be engaged in appropriate exercise for optimal, healthful living.

Then let's get to the tough part of the conference. Where do we go from here?

All of you can play a role in implementing the following recommendations, some in a major way and some within your personal sphere of influence. Should you accept this challenge (and I hope you will), you can feel that you have rendered a significant service to your fellow man and to the national program of physical fitness and sports.

1. Starting with yourselves – make dynamic, healthful living a reality in your home. Get the word to an aging parent or older relatives. Take a walk with them. What are appropriate flexibility and strength activities for them? If they can't or don't want to jog, they can swim. Swimming is a complete and safe exercise for seniors; and, with nearly two million pools in the U.S., there are few who don't have access to this medium.
2. Report the significant statements, findings and recommendations to appropriate community and state authorities and agencies.

3. Find out the extent of physical fitness programs for seniors in your community. What programs are provided by schools, aging agencies, colleges, hospitals, churches, quasi-public agencies, recreation and health departments?
4. What are industries and business providing in pre-retirement orientation and/or programs for retired employees?
5. Learn about your governor's council on physical fitness. What does it do for older citizens? You don't have one? Inquire if one is under consideration. Be an active advocate.
6. Influence the media to help in changing the image of older people. It may be through a local TV or radio station or through your agency's advertising campaigns. I am convinced that we have done older people a great disservice through our traditional concern for their welfare. By constantly telling them to "slow down" and "take it easy," we kept them away from the physical activity that can keep their spirits and their bodies healthy. Alex Comfort, one of my favorite authors, wrote, "Most of the handicaps of oldness in our society are social, conventional, and imaginary. The physical changes are trifles by comparison. When one looks at the world's leadership in industry and government, one realizes most leaders are over 60 years."
7. Support a National Volunteer Leadership Training and Certification Program. Realistically, most face-to-face leadership in physical fitness for seniors must come from volunteers. Thus, federal agencies and national associations concerned with older citizens are encouraged to join the PCPFS in developing, launching, and implementing the national program.

In closing, I hope you will pardon my shift from the job ahead to a few remarks about one of our greatest Americans who had looked forward to being with us the last few days. On Wednesday evening, Lowell Thomas was posthumuously awarded the 25th Silver Anniversary Award. This was one of the Council's proudest moments.

When the Council decided to put national emphasis on exercise programs for older Americans in the early '70s, we searched the country over and decided that Lowell Thomas was the role model for this task. As a result, in 1973 I had the delightful privilege of interviewing this vigorous octogenarian at Quaker Hill, his estate in Pawling, N.Y. His 3,000-acre property included a 34-room home, a golf course, two bass-stocked lakes, a ski lift and chalet, wild deer and a broadcasting studio.

During the filming of "Physical Fitness for Older Americans," we had considerable time between shots, during which I learned that he was born next door to Annie Oakley in Ohio and went to work in the mines in the Colorado Rockies when he was 13. While in Cripple Creek, he was on the high school football team. He developed an early interest in boxing and once put on the gloves with Jack Dempsey.

Lowell attended the 1932 Winter Olympic Games in Lake Placid, which turned him into a skiing zealot. He was both an avid Alpine and Nordic skier and said that "anyone who can walk can cross-country ski." His skiing injuries included broken legs and twice a broken shoulder, but these didn't dampen his ardor.

His work in the mines helped him to develop a strong muscular body. His forearms were very muscular, and he had the grip of a wrestler. While in Tibet, riding an unbroken horse on a 17,000-ft. pass, the animal wheeled and tossed him over the edge of the trail, smashing his hip in eight places. It required 20 days to carry him down on a litter.

Norman Vincent Peale said at the funeral last week that "Lowell Thomas was one of our great Americans." He certainly was America's most illustrious newsman for the last six decades. No other individual or world figure remained in the public spotlight as long. CBS Chairman William Paley said recently, "Mr. Thomas was a young man 50 years ago when I met him and he was a young man when I last saw him."

When he passed away, he was working on a series of vignettes on what people accomplished in their later years. He called these "The Best Years" and they were for a syndicated radio feature. Lowell Thomas was the epitome of what this conference is all about. He was physically robust, having escaped debilitating diseases, possibly through good luck or a genetically determined immunity, and had the self-discipline to manage his lifestyle. Particularly important to us is that he was psychologically robust enough to have rejected the typical lifestyle of his peer group. Lowell Thomas is our appropriate example of normal old age. He is not peculiar, and the quality of his later years was unquestionably superior to that of other older Americans who rarely leave their abode and whose daily activity is to shuffle from bed, to toilet, to chair, to bed. "LT" believed in this conference and felt the challenge is one we cannot fail to meet. The stakes are too high. Quite simply there are more years of life and a more abundant way of living for 35 million of our fellow Americans.

In closing, "so long until tomorrow," and God bless you.